HISTORIC RESOURCES DOCUMENTATION FOR THE SOMERS TIE PLANT SOMERS, MONTANA

Submitted to:
The Montana State
Historic Preservation Office

Submitted by:
Burlington Northern Railroad

December 1990

REITEC
REMEDIATION
TECHNOLOGIES INC

REMEDIATION TECHNOLOGIES INC

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February 11, 1991

Mr. Jim Harris
U.S. EPA, Montana Operations
Federal Building
301 South Park
Drawer 10096
Helena, MT 59626-0096

Dear Jim:

I am returning to you herein the original historic resources documentation for Somers which was previously submitted to you in December 1990. Two additional copies of the original submittal are also enclosed as are the original blueline drawings of the tie plant.

Please call me if you have any questions regarding this submittal.

Yours truly,

REMEDIATION TECHNOLOGIES, INC.

Lena Blais

Lena Blais, P.E.
Environmental Engineer

LB:kdw

Enclosures

cc: M. Burda
C. Trueblood

Historic American Engineering Record
Index to Photographs

Great Northern Railroad Company Tie Plant **HAER No. MT-86**
Somers
Flathead County
Montana

James McDonald, Photographer August 1990

HAER MT-86-1 Looking Southeast at the timber storage yards. The tie plant is in the center of the photo.

HAER MT-86-2 Looking southeast at the existing structure. The tie plant is in the center of the photo.

HAER MT-86-3 Looking southeast at the railroad tracks into the plant.

HAER MT-86-4 Looking northwest at the railroad tracks and yards from the tie plant to the spur line to Kalispell.

HAER MT-86-5 Looking southwest at the other buildings and the town of Summers from the main tracks.

HAER MT-86-6 Looking southeast at the retort doors of the tie plant.

HAER MT-86-7 Looking east at the tie plant building.

HAER MT-86-8 Looking northeast at the tie plant building.

HAER MT-86-9 Looking northwest at the tie plant building.

HAER MT-86-10 Looking west at the tie plant building. The air tanks are in the foreground.

HAER MT-86-11 Looking southwest at the tie plant building.

HAER MT-86-12 Looking south at the tie plant building.

HAER MT-86-13 Looking east in the machine room at the retort tanks and related machinery. The tank scales, controls, and gauges are in the foreground.

HAER MT-86-14 Looking northeast at the gauges and dials of the retort tanks.

HAER MT-86-15 Looking east at the valves and controls for the retort tanks.

HAER MT-86-16 Looking south at the air compressor equipment.

HAER MT-86-17 Looking north at the steam piping, valves and controls on the retort tanks.

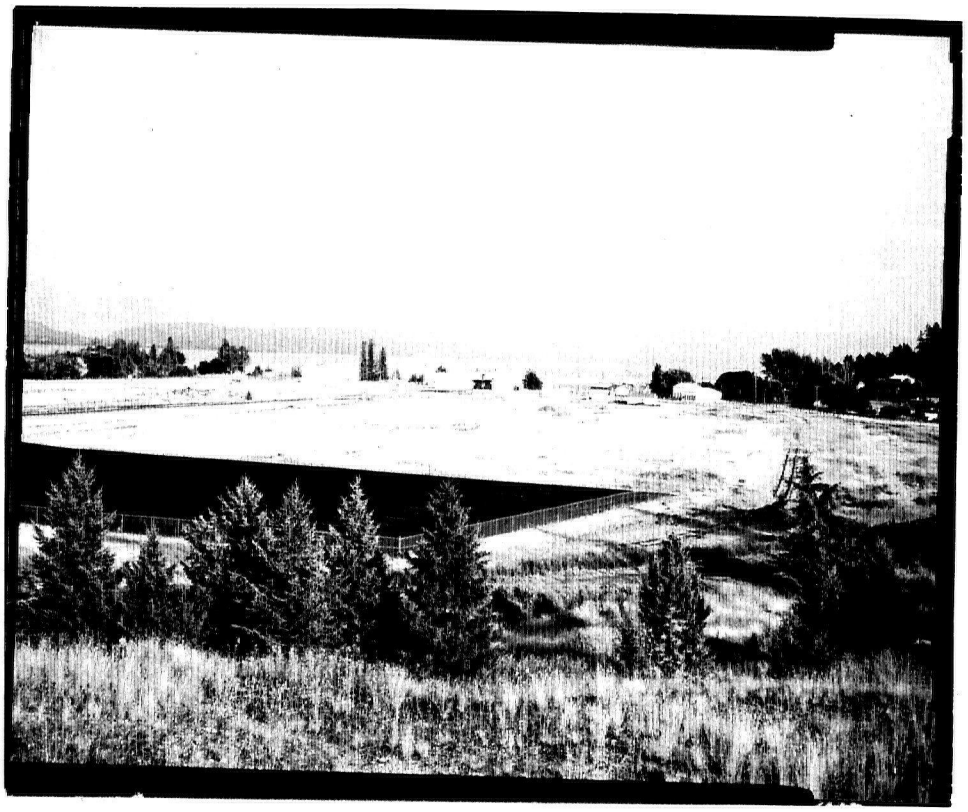
HAER MT-86-18 Looking southeast between the two sets of retort tanks. The walkway goes over the creosote holding tanks on the scales.

HAER MT-86-19 Looking southeast at the roof truss system in the tie plant.

HAER MT-86-20 Looking south at the retort tanks and oil room in the tie plant.

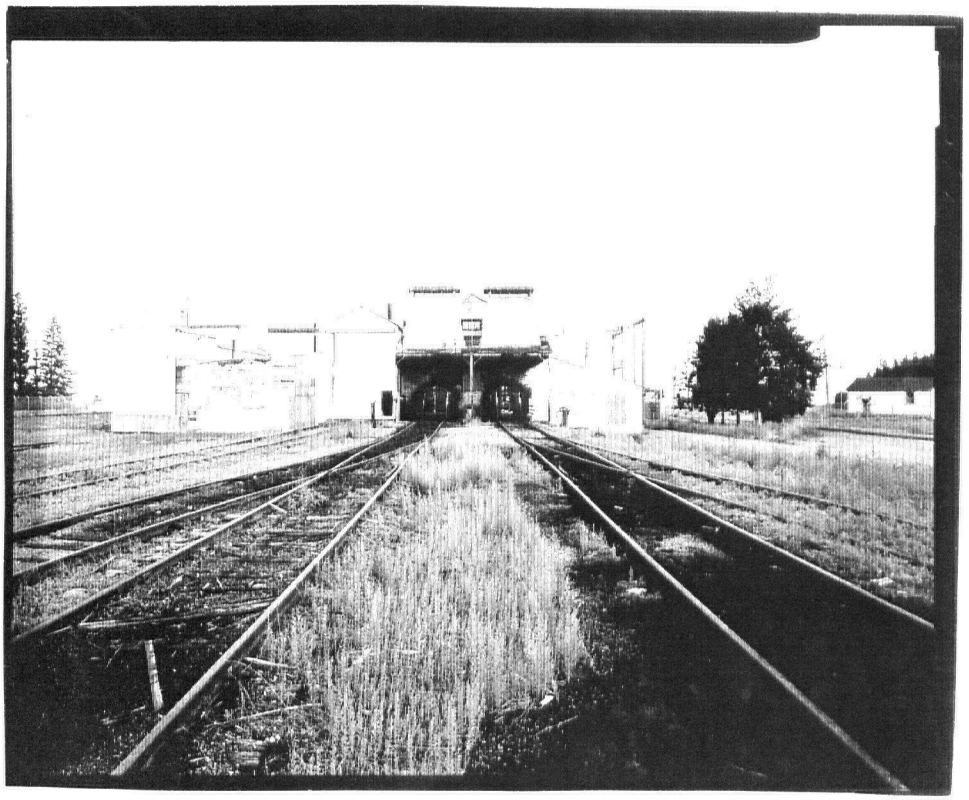
HAER MT-86-21 Looking west/northwest at the building structure and the blow back tank.

HAER MT-86-22 Looking northwest at the ends of the vacuum tanks and blow back tank.



HAER MT-86-1

HAER MT-86-2



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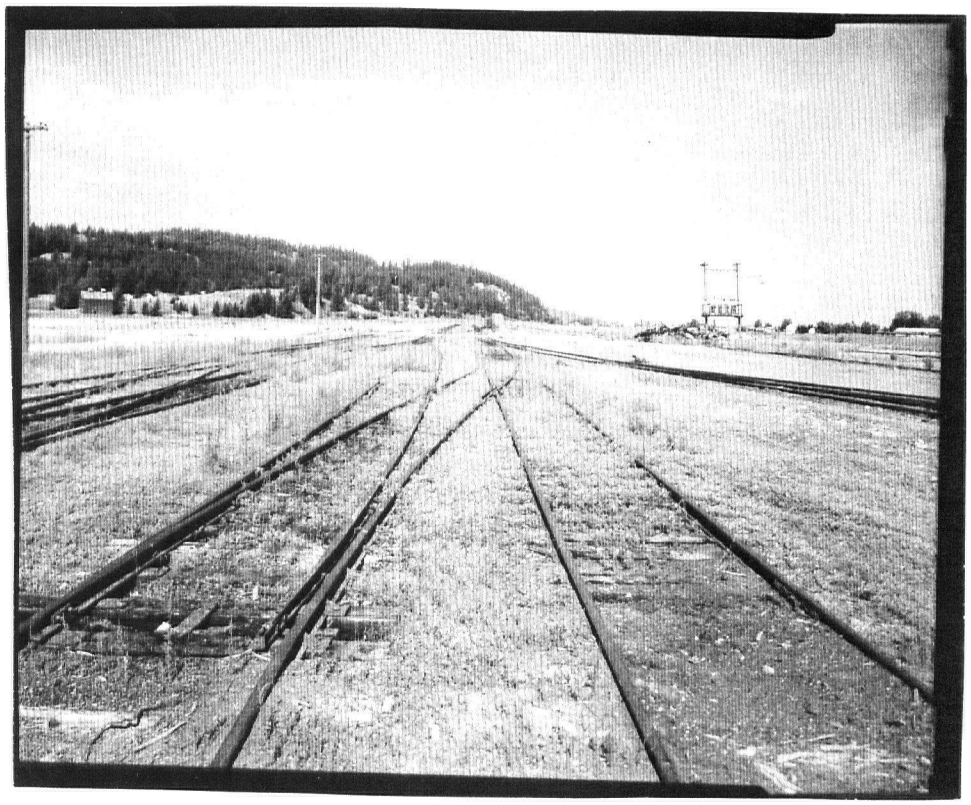
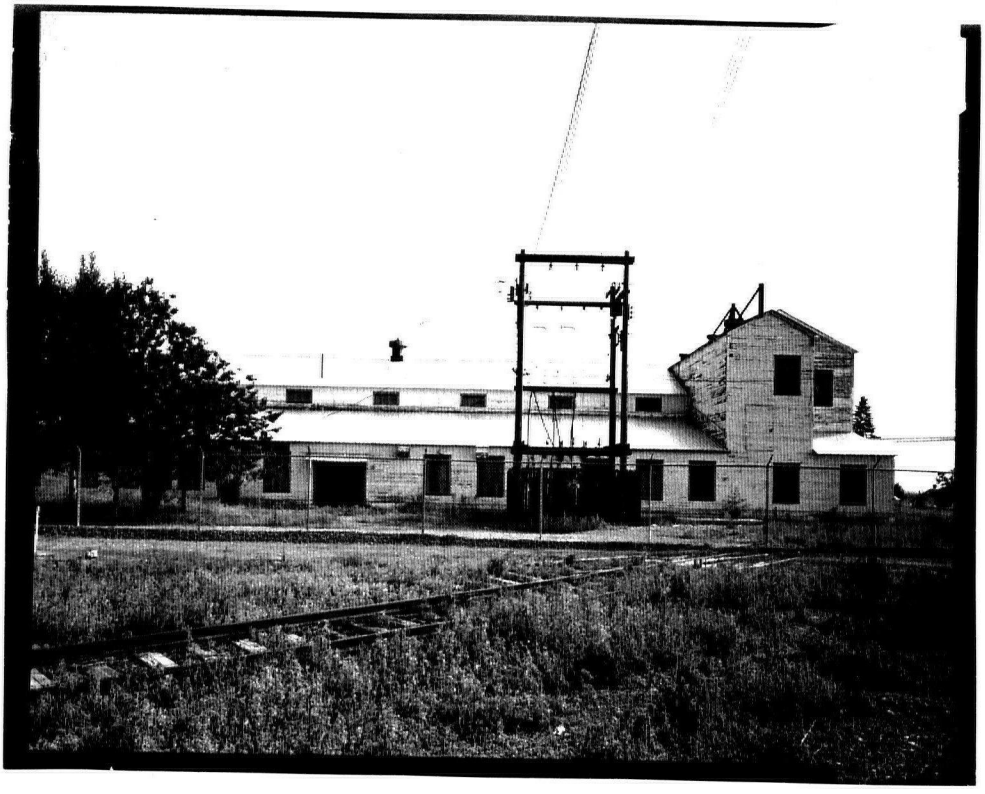


HAER MT-86-4

HAER MT-86-5

HAER MT-86-6

HAER MT-86-7



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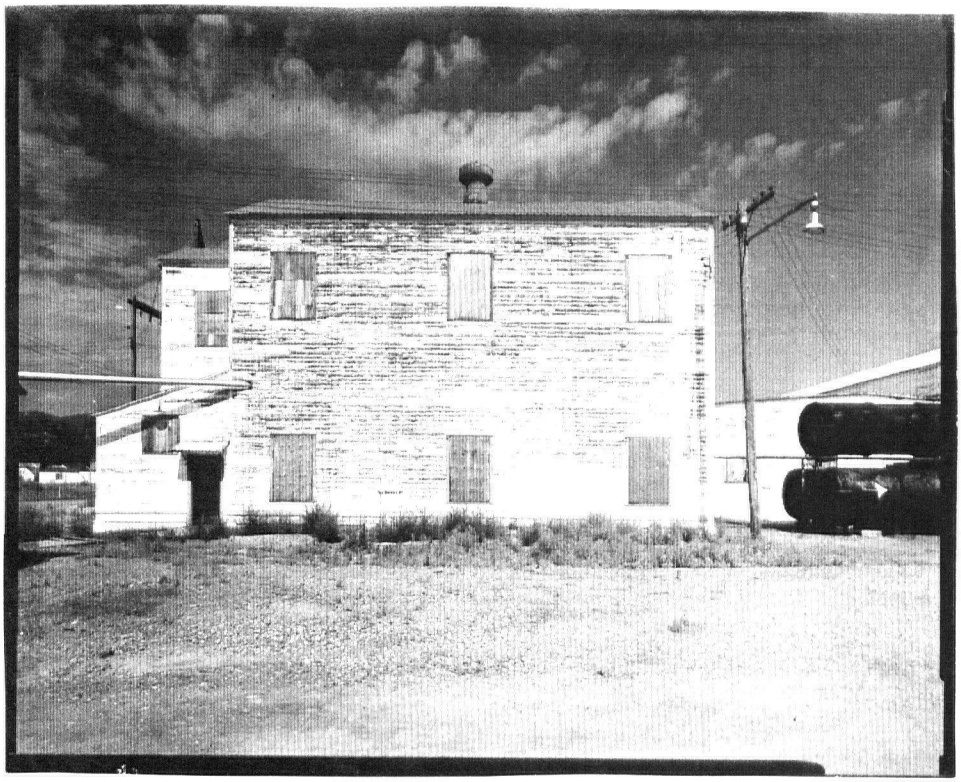

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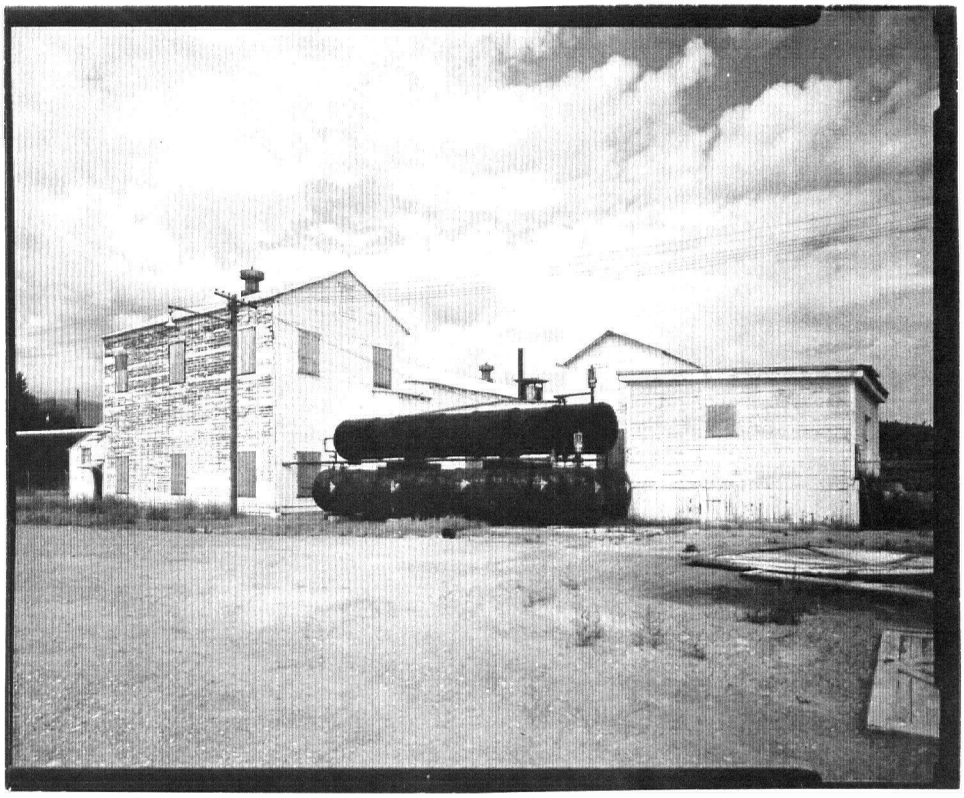

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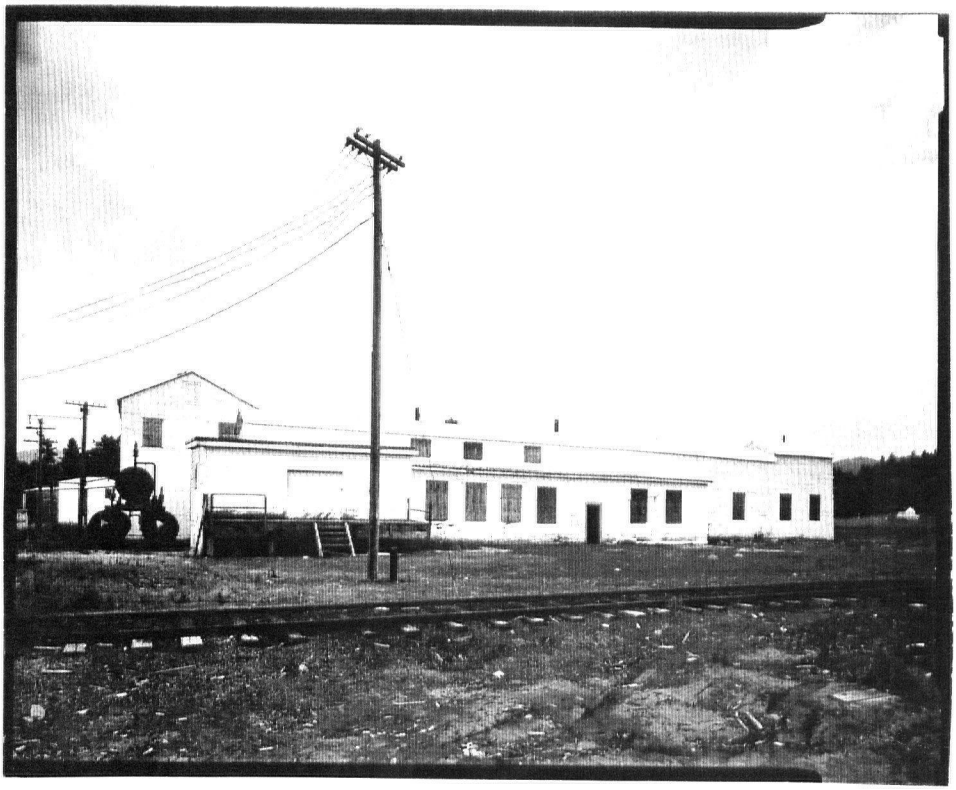

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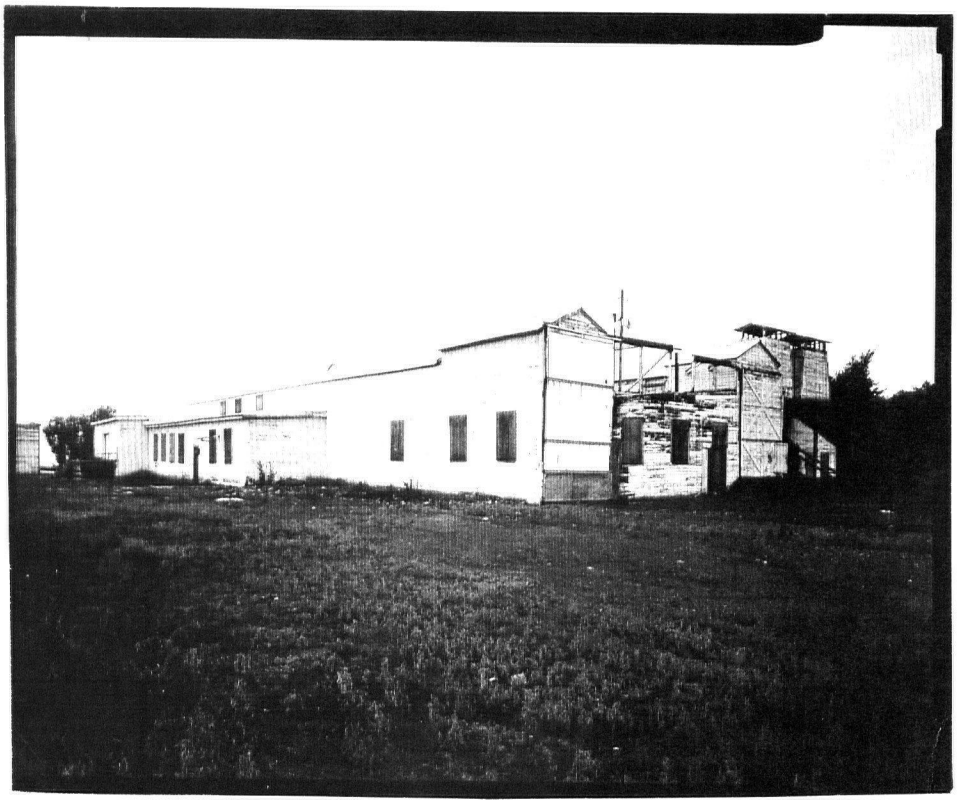

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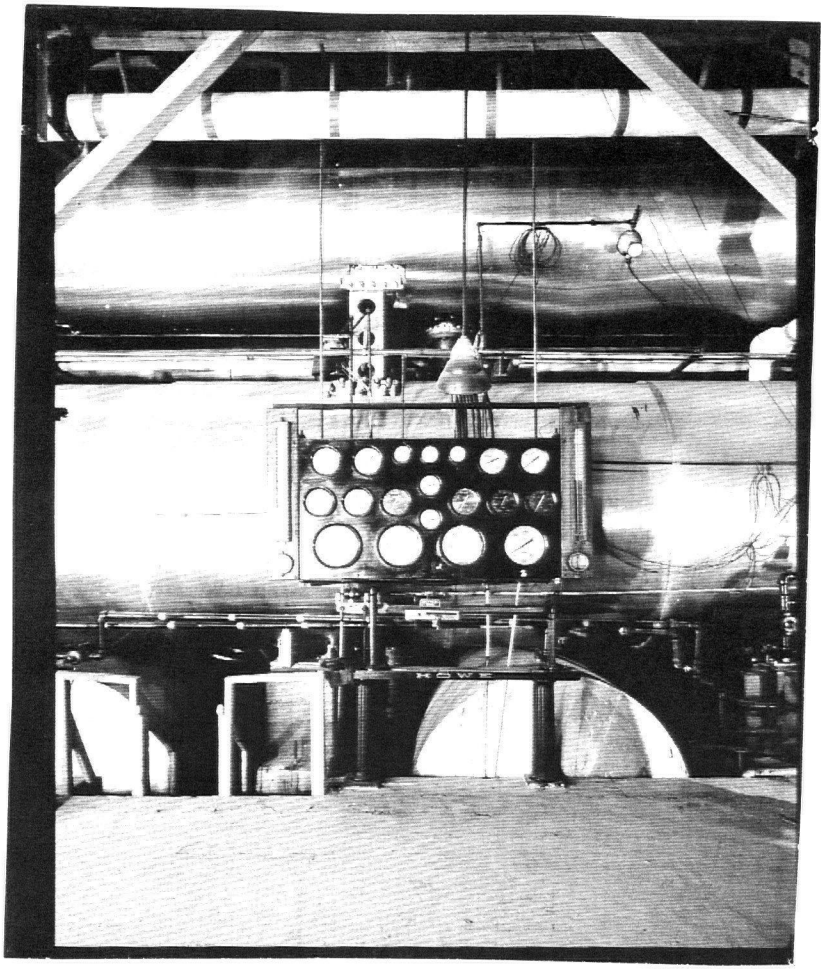
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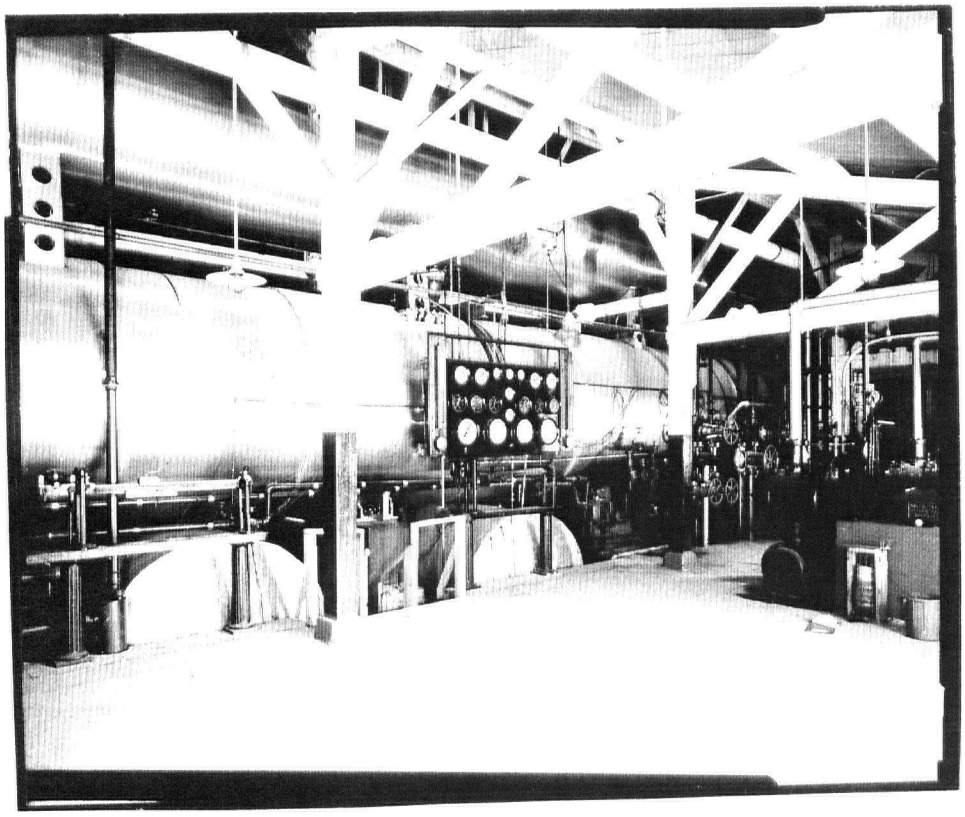

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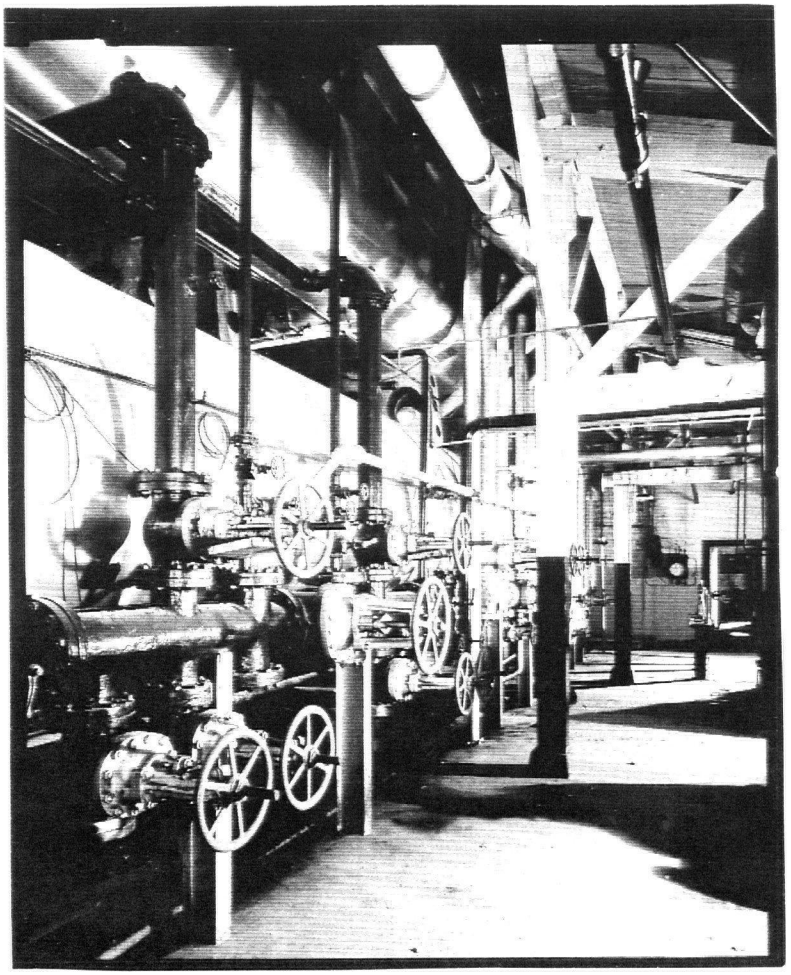

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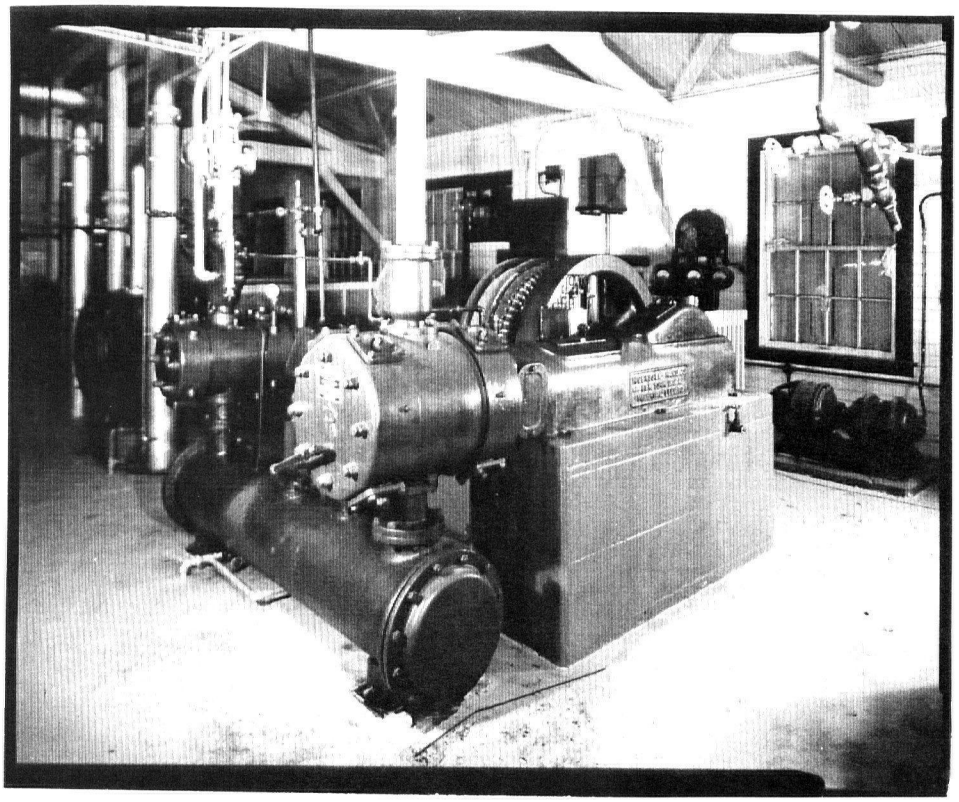

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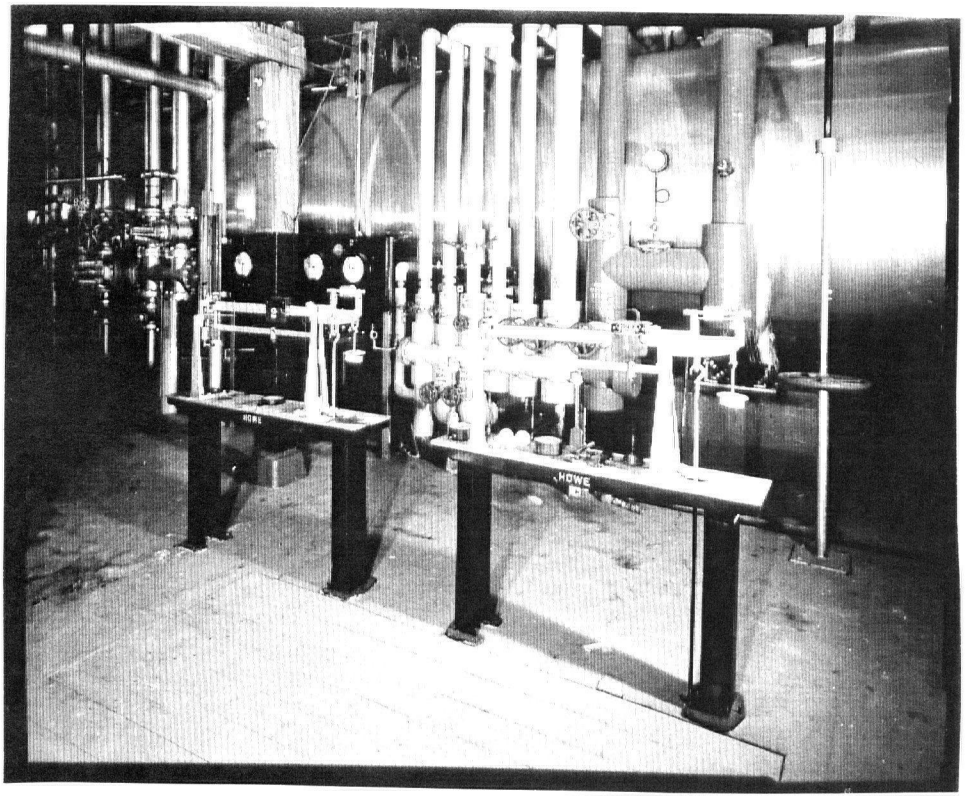
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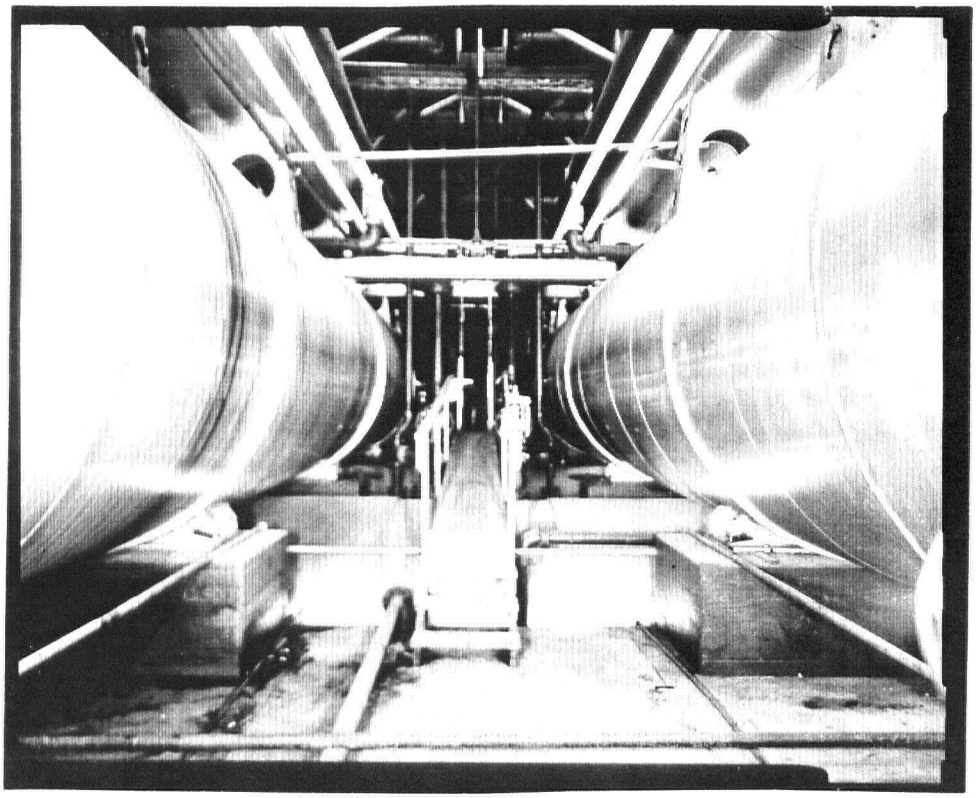

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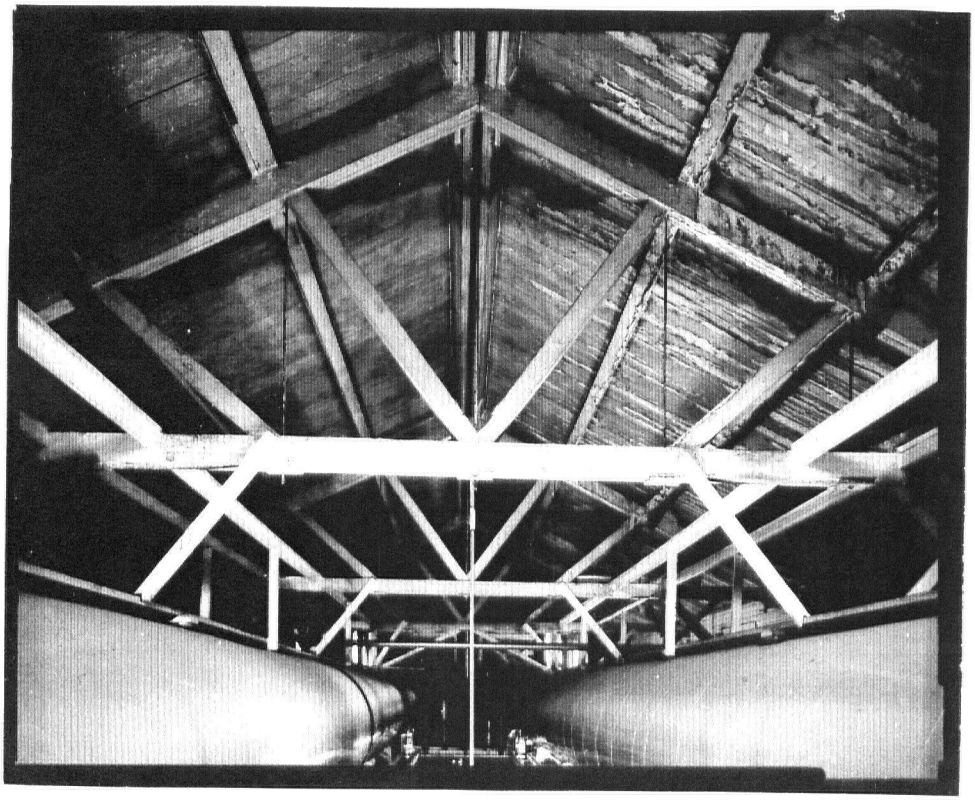

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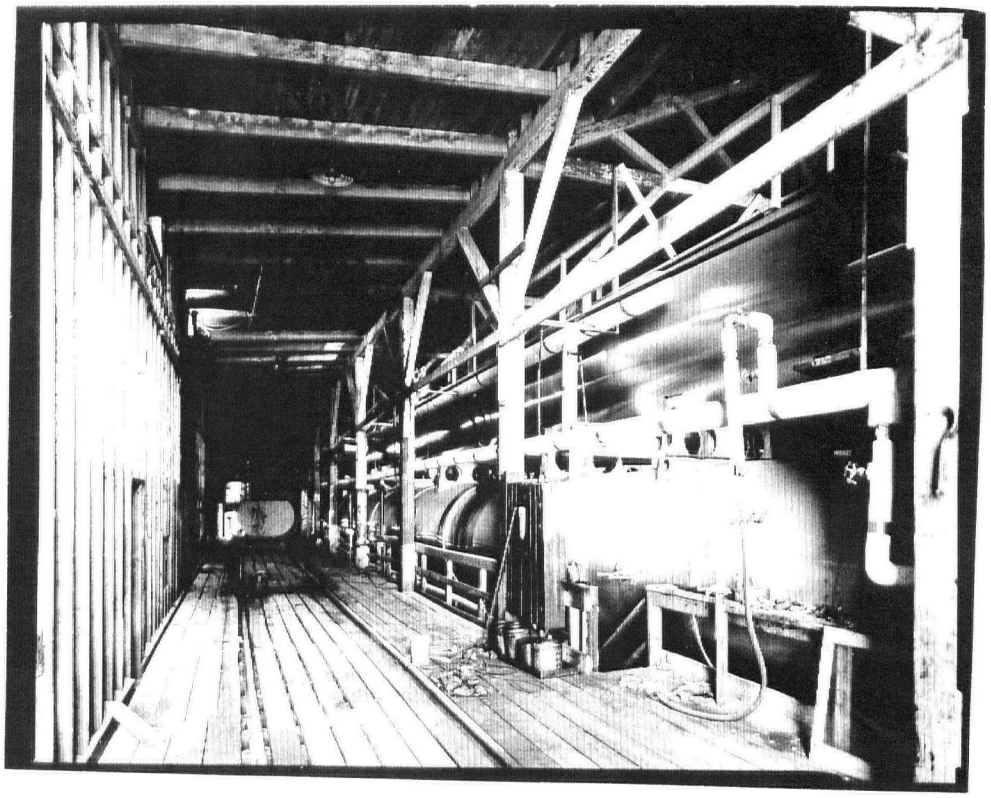

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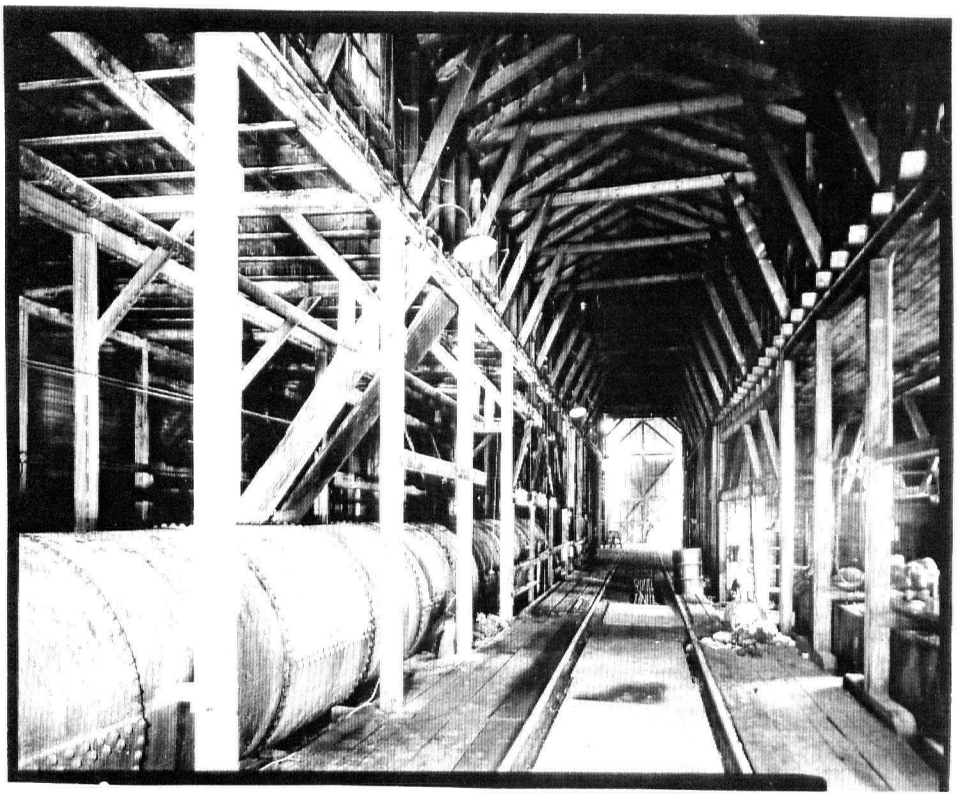

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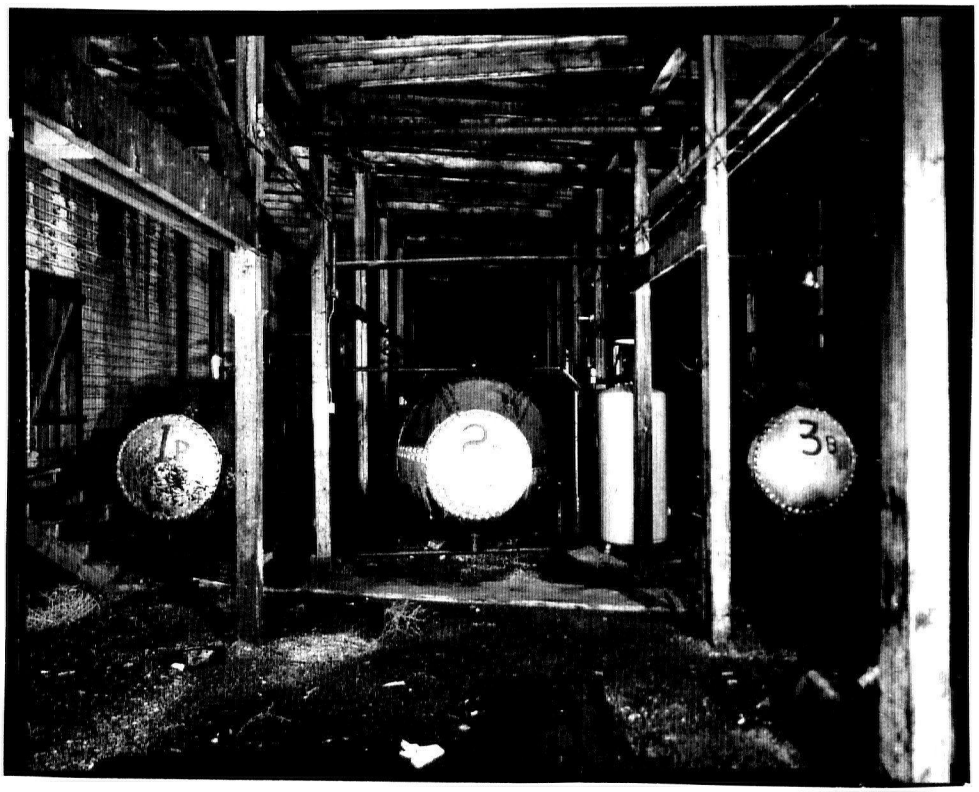
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HAER MT-86-22

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INDEX TO SUPPLEMENTAL PHOTOGRAPHS OF ORIGINAL PLANT DRAWING

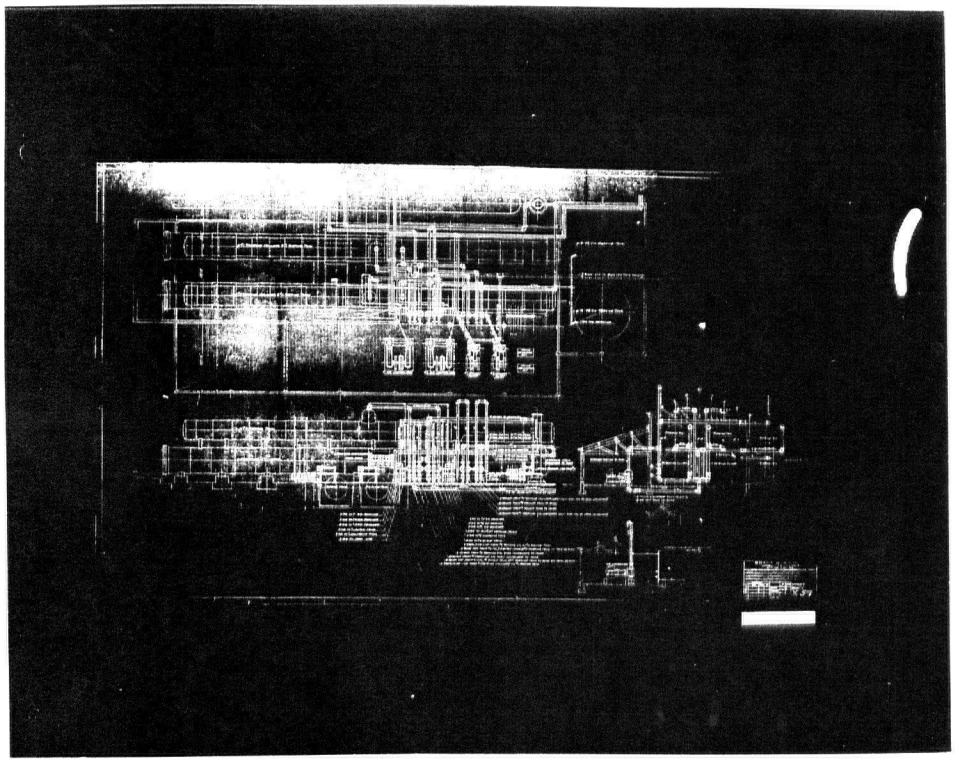
Great Northern Railroad Company Tie Plant
Somers
Flathead County
Montana

HAER No. MT-86

Chris Levitt, Photographer

December 1990

HAER MT-86-23	Vacuum, Equalizing & Air Piping in Treating Building
HAER MT-86-24	Oil, Overflow, Steam & Blow-back Piping
HAER MT-86-25	Piping to Gauging Board in Treating Building
HAER MT-86-26	Arrangement of Piping to Vacuum Tanks, Blow-off Tank & Tank Car
HAER MT-86-27	Air Piping Outside of Treating Building
HAER MT-86-28	Retort House - Tie Treating Plant - Elevations
HAER MT-86-29	Retort House - Tie Treating Plant - Sections
HAER MT-86-30	Retort House - Tie Treating Plant - Plan & Truss Details
HAER MT-86-31	Great Northern Railway - Kalispell
HAER MT-86-32	Steam & Water Piping in Treating Building



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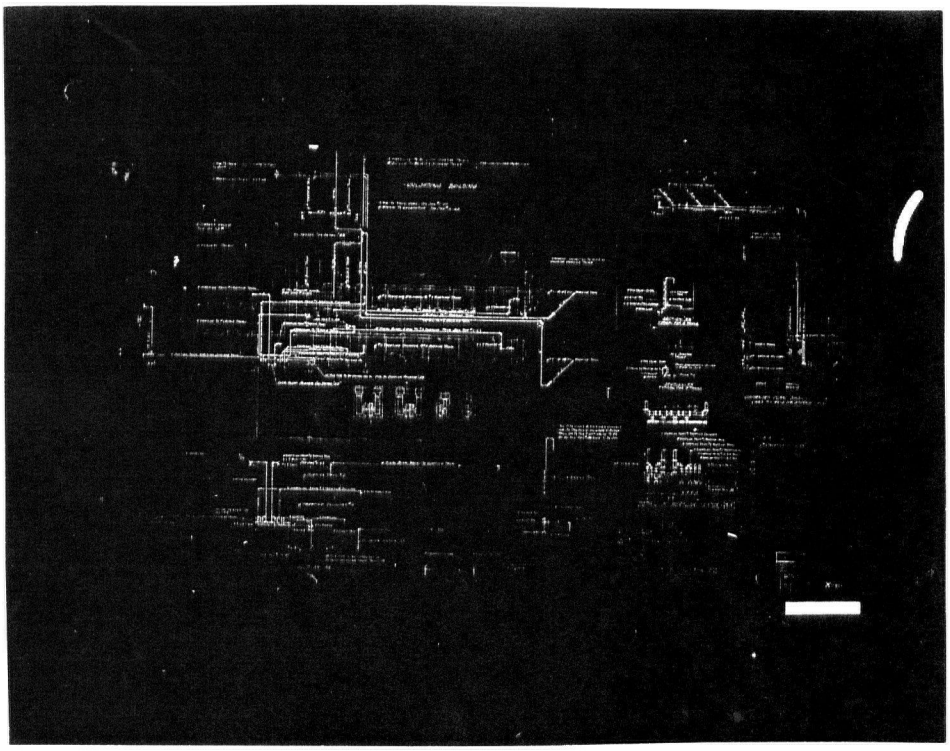

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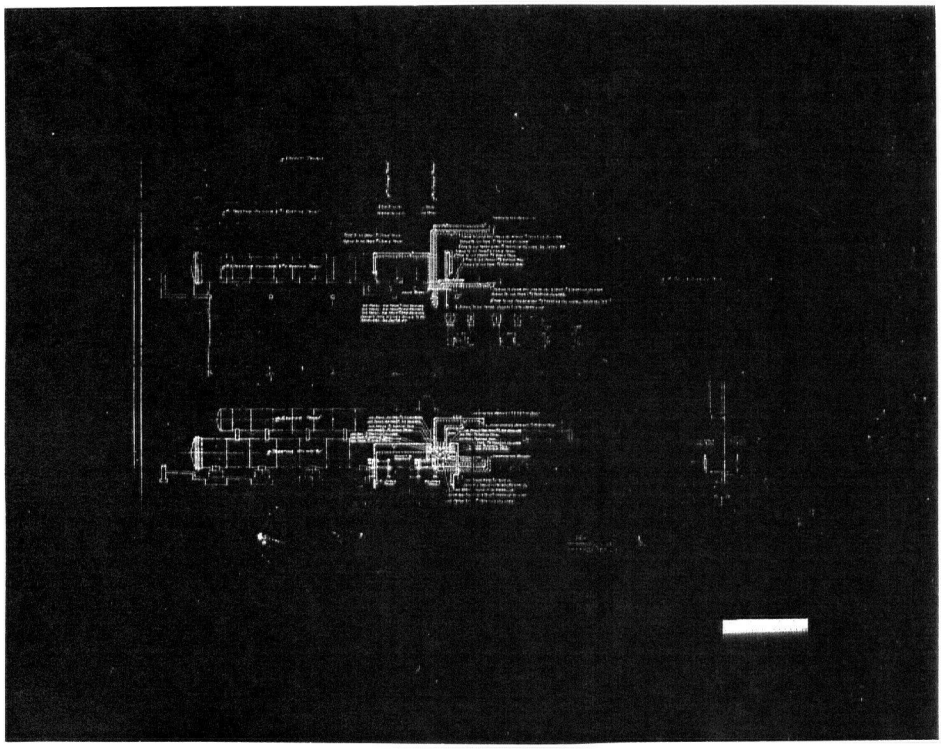

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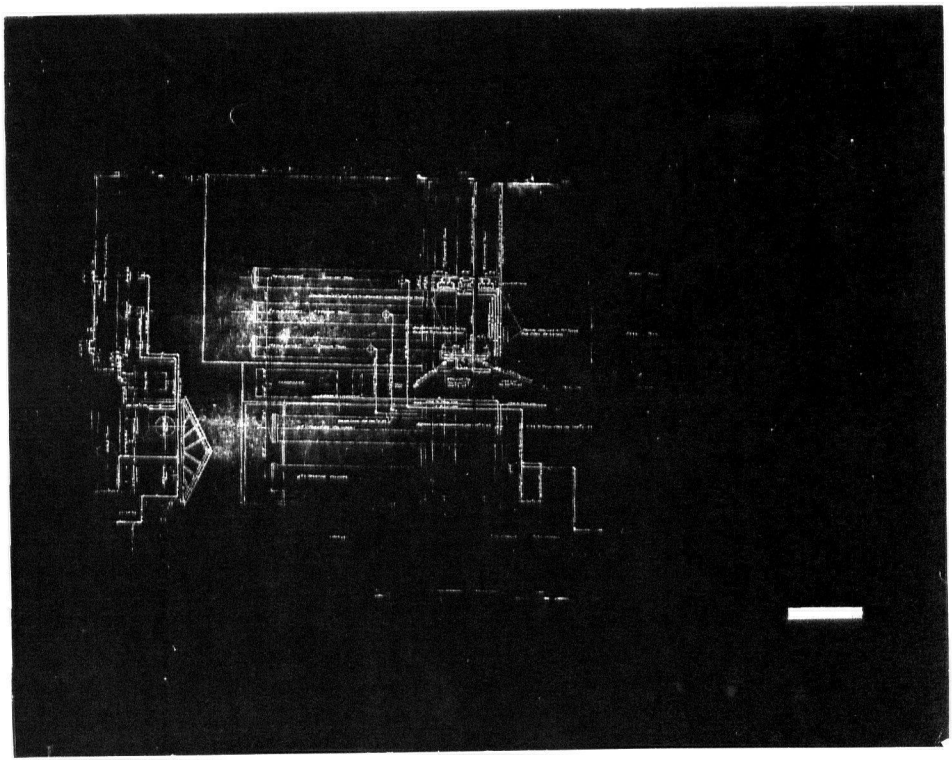

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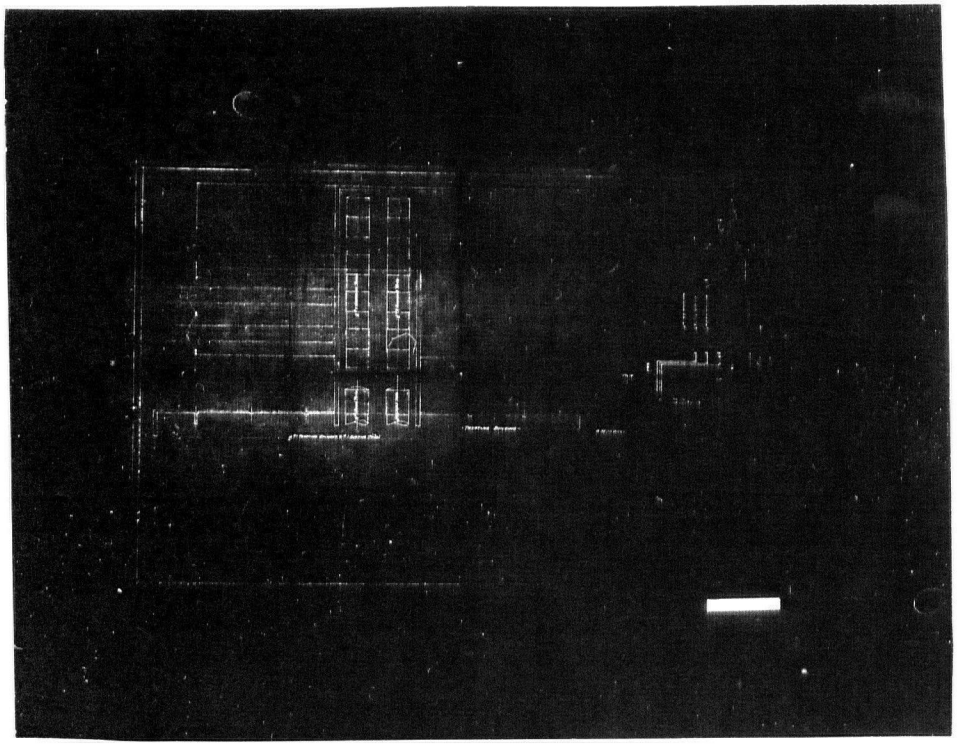

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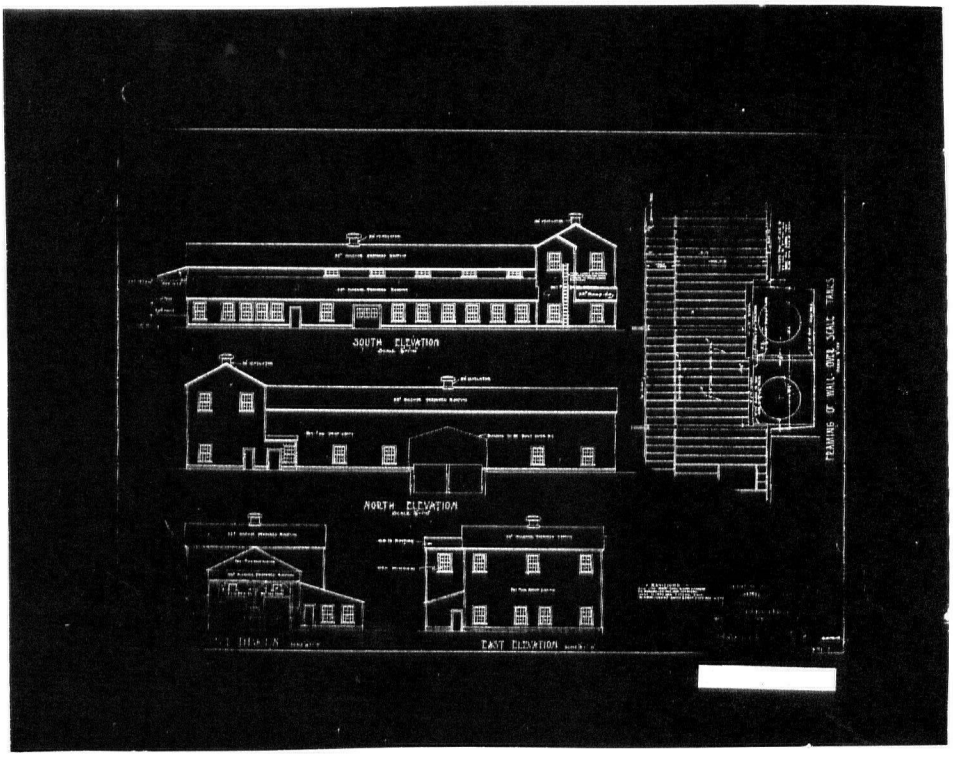
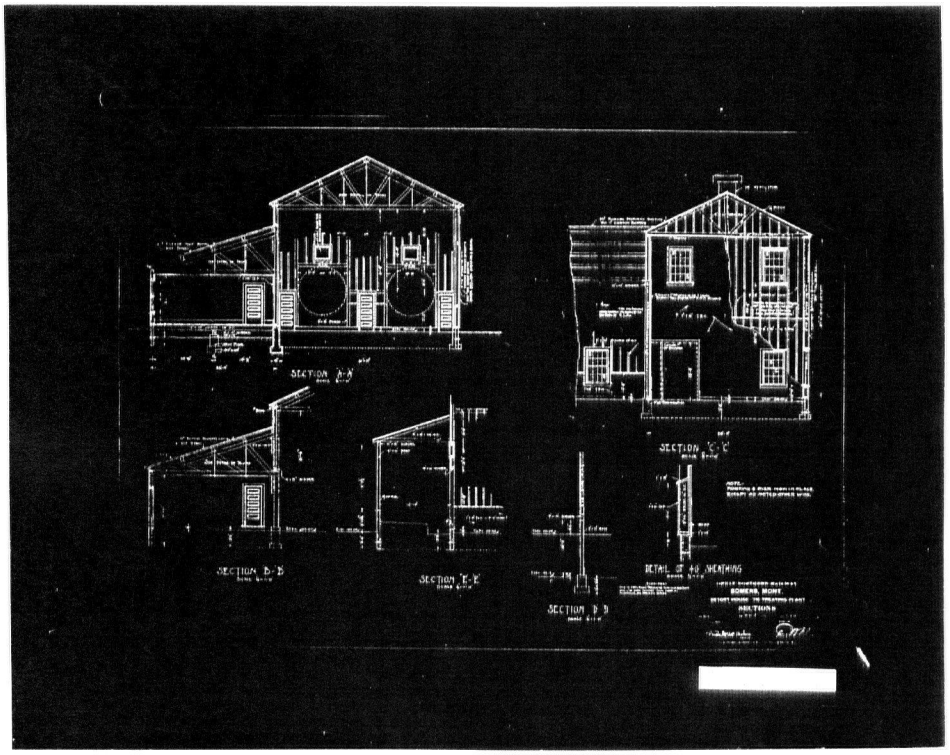
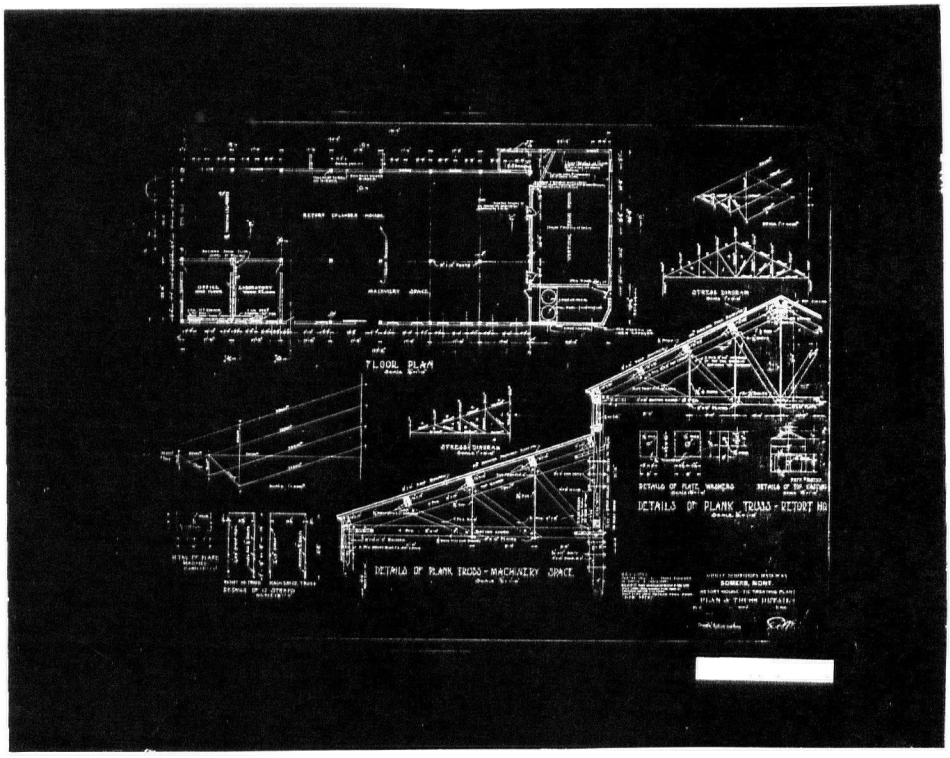

SOUTH ELEVATION
NORTH ELEVATION
EAST ELEVATION

HAER MT-86-28

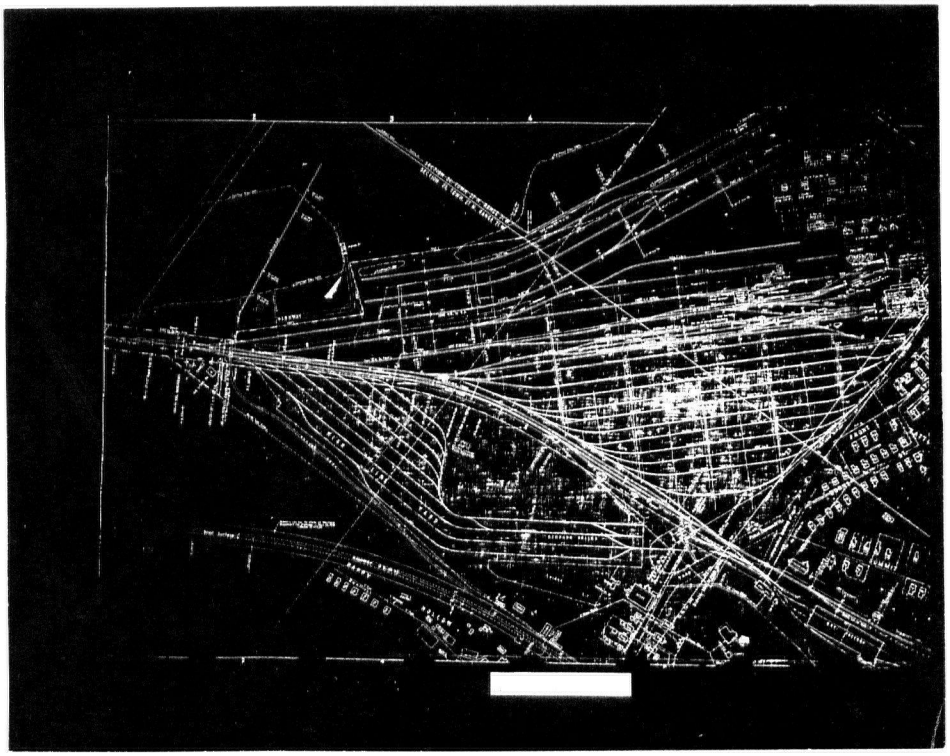

SECTION A-A
SECTION B-B
SECTION C-C
SECTION D-D
SECTION E-E
DETAIL OF AB SHEATHING
BOWERS, MONT.
SECTIONS

HAER MT-86-29


FLOOR PLAN
DETAILS OF PLANK TRUSS - MACHINERY SPACE
DETAILS OF PLANK TRUSS - RETORT HO

HAER MT-86-30


SOMERS NO. 1
FLATHEAD CO., MONT.



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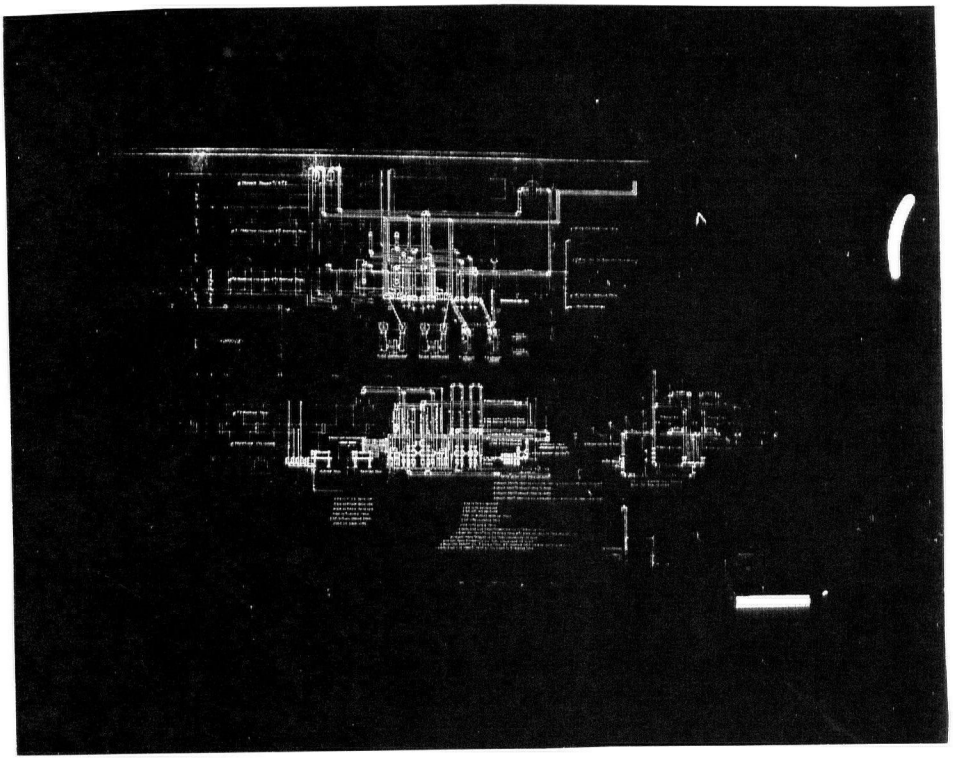
HAER MT-86-31b



HAER MT-86-32

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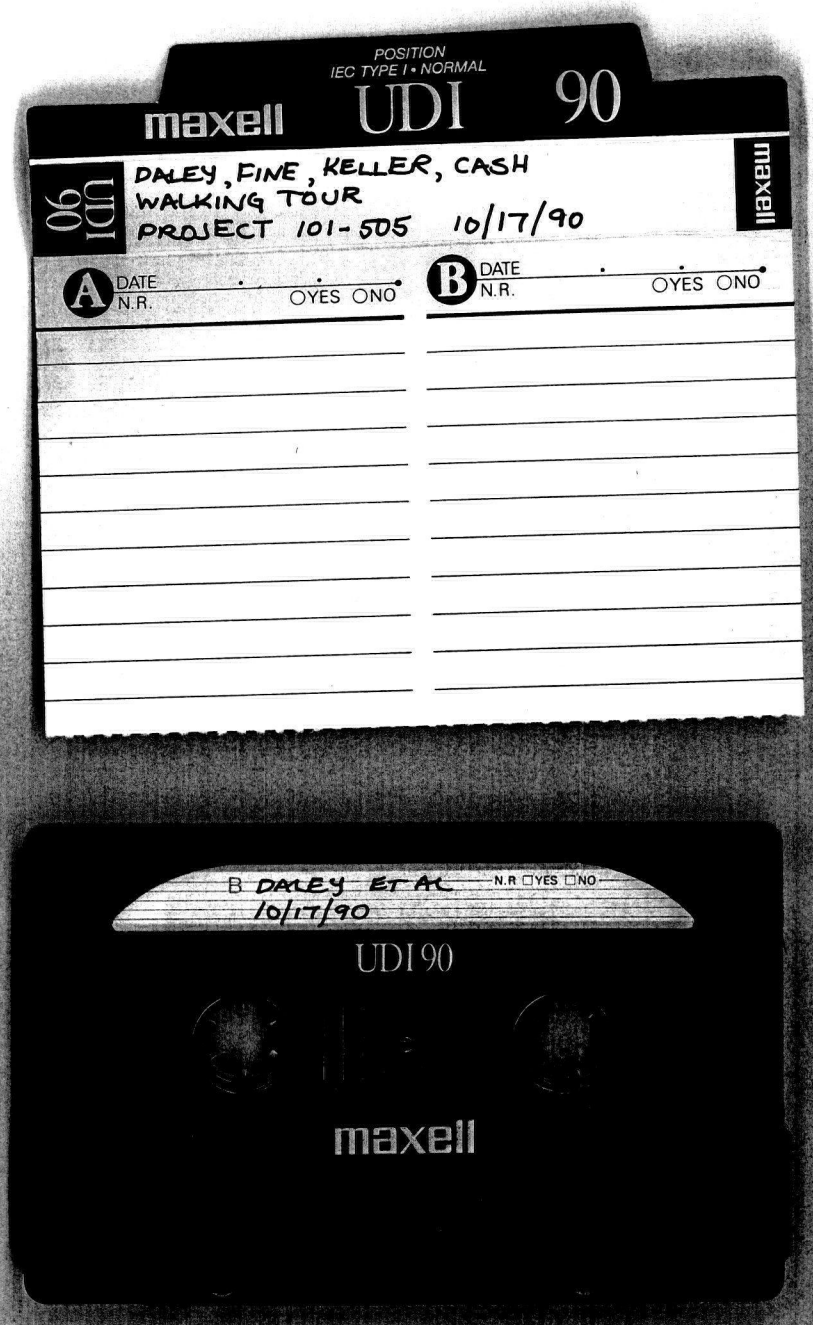
NOTICE

THIS ~~ITEM~~ IS NOT SUITABLE FOR MICROFILMING, BUT IS AVAILABLE FOR REVIEW AT THE U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION VIII, HELENA, MONTANA.

TITLE 2 audio cassettes of interviews with former Somers Tie Plant employees

FILE NO. 23.3 DOCUMENT NO. 416330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UDI 90
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WALKING TOUR
PROJECT 101-505 10/17/90
maxell
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B DATE N.R. OYES ONO
B DALEY ET AL N.R ☐YES ☐NO
10/17/90
UDI 90
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WALKING TOUR 10/17/90
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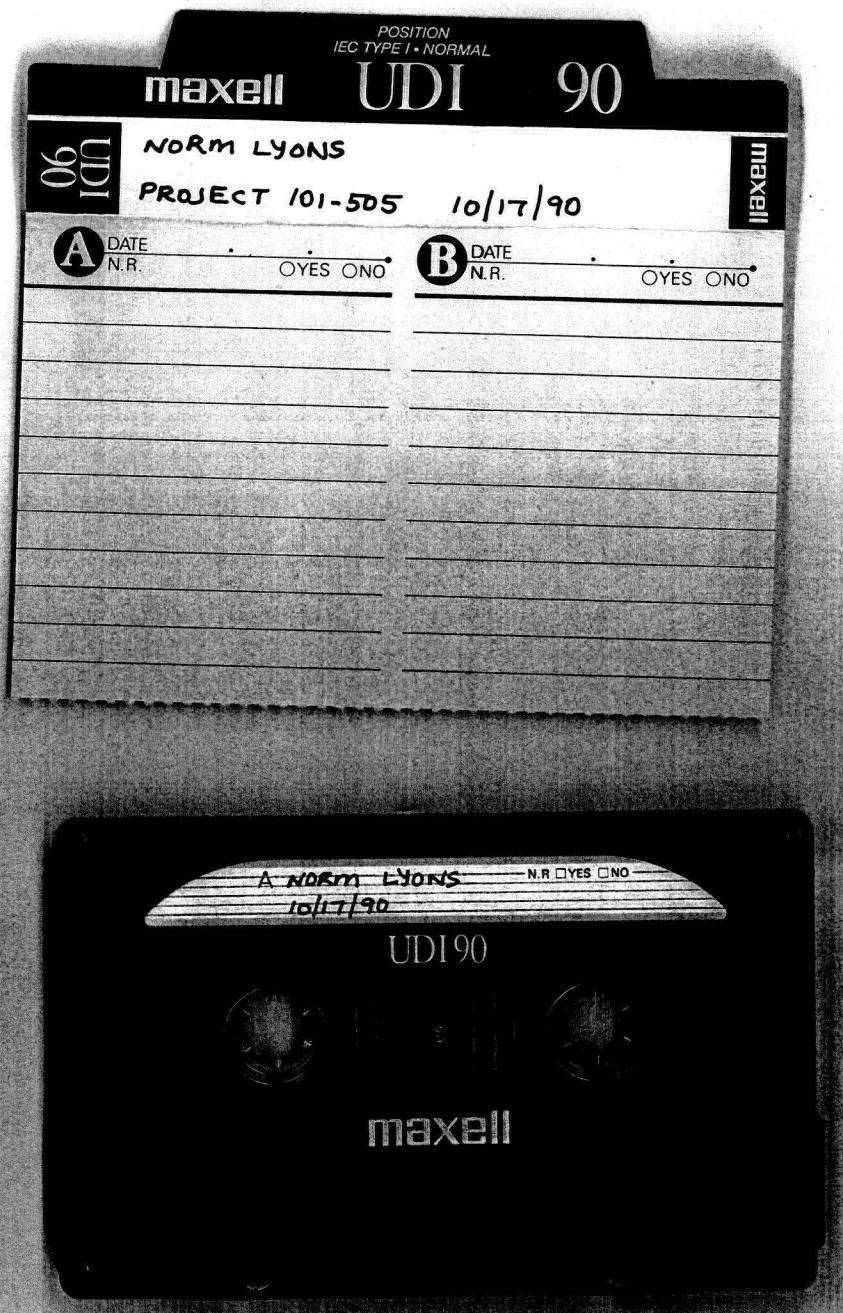
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UDI 90
maxell

Interview with Mike Lyons, former maintenance man at the Somers Tie Plant. Interviewed by Ann Hubber of Historical Research Associates, Oct. 17, 1990.

Audio disturbances: none. However, Mr. Lyons is soft-spoken and occasionally difficult to understand.

Side I, Tape I:

000-014: Introduction

015: Residency (Kalispell); previous experience; position at tie yard

023: advantages of working in boiler room

028: positions at tie plant - boiler room to maintenance room

030: process in boiler room

046: describes the month during which the yard closed for maintenance

051: work conditions in boiler room. "A steady noise"

060: disadvantages of the small lumber suppliers (independent operators)

075: Company/employee relations: "no problems with the management"

078: Union's power: "not too much. The union was fairly weak"

085: place of residency of the majority of the employees

090: technological changes; introduction of hydraulic lifts (c. 1965) the most dramatic change

106: reasons for closure of yard, 1986

126: employee relations

135: assimilation of ethnic groups

143: job satisfaction: "it was a good job; steady and they paid pretty good"

148: wages

162: number of men employed in boiler room/maintenance department.

178: describes equipment room located in the west end of the boiler room

184: division of labor between boiler room and equipment room

192: boiler-room accidents -- none. "Went pretty smooth"

200: stories from old timers

230: wine festival (recounted in Elwood, A Company Town). Doesn't remember hearing of it

240: current location of steam engines. One west of Kalispell, the other west of West Glacier

247: closure of plant. Lyons parked the steam engines

257: maintenance of steam engines -- "seems like there was always something"

264: operation of steam engines

280: briefly describes treating process, from green yard to black yard

303: location of black yard: "north end of tie yard where county road crosses the railroad tracks"

317: hand-loading of ties into retorts

320: piece work

335: pre-hydraulic lifts. "A lot of sore backs"

352: waste pond: "you're making it sound worse than it is.... A lot of people worked there all their lives and died when they were 90 years old"

374: water supply

380: old pictures at Trigger Mike's Junk Shop (located between Somers and Lakeside)

390: steam engines introduced in 1926 and 1927. Replaced "electric motors"

396: use of horses, both in lumber yard and tie yard. Horse shoes fitted with cork so the horses wouldn't slip

Walking interview with Kenneth Daly, Richard Keller, Percy Fine, and Mike Cash, former employees of the Somers tie yard. Interview conducted by Ann Hubber of Historical Research Associates on the grounds of the former Somers tie plant, Oct. 17, 1990.

Audio disturbances: crunch of gravel, passing traffic, Daly's two-way radio.

Side I, Tape I:

000-016: Introduction

017: Keller introduction (position and years in yard)

019: Fine introduction (position and years in yard)

024: Daly introduction (position and years in yard)

030: Cash introduction (position and years in yard)

036-047: men Cash worked with

047: description of engine shifts

054: shifts in treating plant/yard

057: description of lagoons located at the end of track 6

075: waste treatment process prior to c.1970 installation of lagoons

081: description of waste ditch

085: process of hauling ties to the Adzing and Boring mill (A and B mill)

089: Keller describes the various boring plate. Cash points out a tie plate on the remaining track

108: introduction of Adzing and Boring mill

109: Keller describes new A and B machine proposed in the 1980s. Compares to the 1927 machine

129: narrow gauge tracks used prior to 1927

133: discussion of size and appearance of A and B mill (now demolished)

256: Daly describes minor accident (involving Cash falling through holes in the floor boards of the treating plant)

266: description of treating process

288: description of treating engineer shifts

296: description of cleaning the retorts

307: Daly points out the valve used to fill the retorts

314: Fine describes the mixing tank located in the small room at the back of the treating building

324: brief description of scale tanks

334: description of post-1927 use of original retorts

348: Daly describes process by which vacuums and water pressure moved precipitates; "not a drop of oil moved with a pump.... The guy that designed this place was a genius"

368: scale tanks described

376: Fine recounts industrial spill

417: description of working conditions in the treating plant, A and B mill, and boiler room

459: discussion of extent to which different ethnic groups dominated different positions

465: description of work conditions in the black yard

498: description of pre-1927 retorts and contemporary use of these retorts

525: description of the trams which held the ties in the retorts

550: description of the engine maintenance area adjacent to the old retorts

552: discussion of 30-day maintenance period

595: discussion of various boiler facilities located throughout Somers

613: description of the sand house. Cash references a Missoulian article, Nov. 7, 1976

637: Cash and Daly discuss work conditions and responsibilities of steam engine operators

644: discussion of breakage of cable or chain holding ties to the trams (within retorts)

686: description of bolts on retort doors. Tightened down with snap-on ratchet

698: discussion of hours worked

716: discussion of union influence

Side II, Tape I:

000: Fine describes credit policy at the Company store

020: wages at the sawmill, c. 1930

023: description of Company barn and previous location of sump pond

044: integration of different ethnic groups

055: discussion re number of people employed at O'Brien sawmill (approx. 300)

058: Cash, Daly recount history of sawmill between closure of the O'Brien operation (1947) and closure of Potter's plywood plant (1958)

065: discussion re number of people employed at the tie yard in the later years (approx. 30-32)

071: discussion of reason for mill's closure (1947)

090: Fine elaborates on the spill discussed on Side I, Tape I

100: description of changes in the town of Somers; early commercial district; social life

164: discussion of cutting ice from Somers bay for private ice houses. Description of the ice house belonging to the Great Northern Railway Co.

186: Cash recounts family history in Somers. Italian immigrants

198: description of tug boats on Flathead lake, circa 1910

210: Daly describes Great Northern records once kept in the office building. "The whole history of this town was up there." Believes that records were taken to the Whitefish landfill

238: Keller recounts family history in Somers

258: Daly recounts family history in Somers

280: Fine recounts family history in Somers

301: description of town when still owned by the Company

308: discussion of residents/company relations

320: Daly discusses boiler-room positions -- best job because it was permanent.

329: description of above-ground steam pipe running between Somers Bay and the tie yard

335: use of steam heat (managers) and wood heat (everybody else)

344: description of "slab alley" - houses once located near the docks

346: description of passenger boats on the lake

360: discussion of sources of hardwood and softwood ties

367: process by which the "gypos" (small independent tie producers) were squeezed out

386: amount of hardwood ties processed at yard prior to closure

389: preference for fir and larch over pine

403: reasons given for closure of tie plant in 1986. Description of the closure, notice given etc....

422: description of closure of sawmill, 1947

451: Black yard -- Fine discusses how quickly the soles of shoes would wear out from the heat of the treated ties (ties would stay hot for four to five days, even in the winter time)

464: benefits, disadvantages of piece work (green and black yards); average weight of a hardwood tie; wage per tie

496: description of health risks to members of the "green gang" and "black gang"

530: discussion re Pete Siderious, former tie yard employee

543: discussion re Leonard Listny (??), an "old tie bucker" who "bucked enough ties to lay a track from Minneapolis and back"

563: Cash recalls the names of former employees

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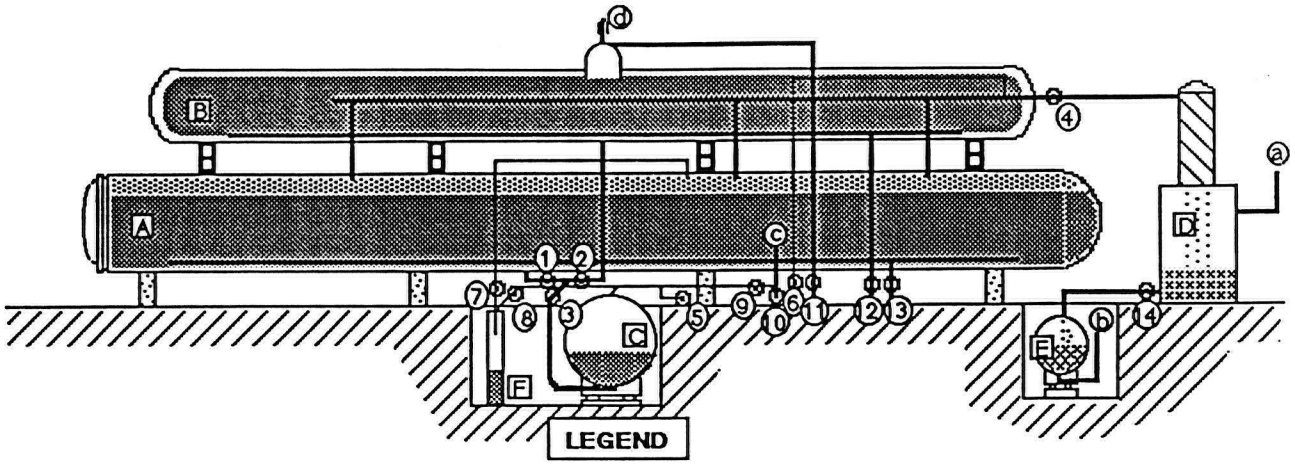

PROCESS UNITS

A Retort
B Rueping Tank
C Scale Tank
D Condenser
E Condenser Scale Tank
F 10" Overflow Pot

PIPE VALVE CONTROL

1 10" Drain and Fill Retort
2 10" Drain and Fill Rueping
3 4" Drain and Fill Scale Tank
4 8" Vapor Header
5 2" Air to Scale Tank
6 2" Blowback Line
7 2" Retort Overflow
8 2" Scale Tank Overflow
9 2" L.P. Air or Vent
10 6" L.P. Air or Vent
11 6" Rueping Tank Vent
12 2" Steam to Rueping Tank
13 2" Steam to Retort
14 2" Condensor to Scale

MISCELLANEOUS

a To Vacuum Pump
b To Drain
c To Low Pressure Tank
d Pressure Refief Valve
Treating Solution
Hot Vapors
Condensate

BOULTON TREATING PROCESS

Start Charge in Retort, door closed, Rueping tank full, Reuping tank temperature at 180 degrees.

Step 1 10" Valves 1 & 2 opened, 3 closed allowing solution to drain from Rueping Tank into bottom of Retort.

Step 2 Retort full, Valve 2 closed, 3 opened allowing 40,000 lbs solution withdrawn from Retort and drained into scale tank. Solution is withdrawn to allow room for boiling and the resulting formation of vapor. Also, this allows a vacuum without drawing oil into the 8" vapor header.

Step 3 With 40,000 lbs withdrawn, 1 and 3 are closed, 8" Valve 4 opened, Vacuum Pump started, draws vapors from Retort through 8" Vapor Header into Condenser, then to Vacuum Pump and discharged outside. Cooling water in Condenser is maintained at 110 degrees, cooling hot vapors and changing them into condensate in Condenser, then drained into Condenser Scale Tank for weighing. Total amount of condensate to be withdrawn is about 2.3 lbs per cubic foot of ties in charge.

Step 4 Total amount condensate extracted, Vacuum Pump shut off, valve 4 closed. The Retort is now filled to total capacity using the 40,000 lbs from Scale Tank earlier drawn off.

Step 5 Retort full, Valves 1 and 3 open, air pressure is now let into Scale Tank through Valve 5 forcing oil up into Retort under 140 PSI. Pressure is maintained until about 7.3 lbs of solution is absorbed into each cu. ft. of ties in charge.

Step 6 Absorbtion finished, Valve 1 closed, Valve 2 open, 140 PSI in Scale Tank forces oil up into Rueping Tank. Scale Tank empty, Valve 3 closed, 1 opened, 6 open to air pressure to Blowback Line and into 8" Header, forcing oil in Retort up into Rueping Tank. When Rueping Tank is full, remainder is forced into Scale Tank.

Step 7 Retort empty of solution, 1 and 2 closed, Vacuum Pump started and draws excess oil off ties, Vacuum Pump stopped, excess oil drained into Scale Tank, charge is now finished.

BURLINGTON NORTHERN RAILROAD

DAVID L. THOMAS
Manager Treated Products
Purchasing & Material Management

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St. Paul, Minnesota
55164-0959

Telephone: (612) 298-3382

December 10, 1990

Ms. Lena Blais
Remediation Technologies Inc.
22419 72nd Ave South
Kent, WA. 98032

Dear Ms. Blais:

In our conversations, you mention that you would like a description of how ties were handled at the Somers Tie Plant. I hope this letter explains what you need to know, if not, let me know and I'll change it.

Somers Tie Plant received ties from approximately 90 sawmills which were located in Montana, Idaho and Washington. Monthly quotas were established for each sawmill dictating how many ties they were allowed to ship during any given month. Ties were purchased 12 months per year and were mostly shipped by truck to Somers where they were unloaded and graded by Burlington Northern's two inspectors. BN purchased three sizes of cross ties 6x8, 7x8 and 7x9 all 8'6" long and primarily fir, larch, lodgepole and ponderosa pine. Ties which didn't meet specifications were culled out. These culls were held for 30 days for the sawmill to pick-up, otherwise they became property of Burlington Northern Railroad.

Once ties were received they were piled in uniform stacks for air seasoning. The method of stacking ties at Somers was called German stacking, which allowed optimum air flow between layers. The amount of time ties were air dried varied by specie and moisture content, but usuallly took about 6 to 8 months. Once they were determined to be dry (25% moisture at 2 inches deep) they were moved to the Adzing and Boring Mill.

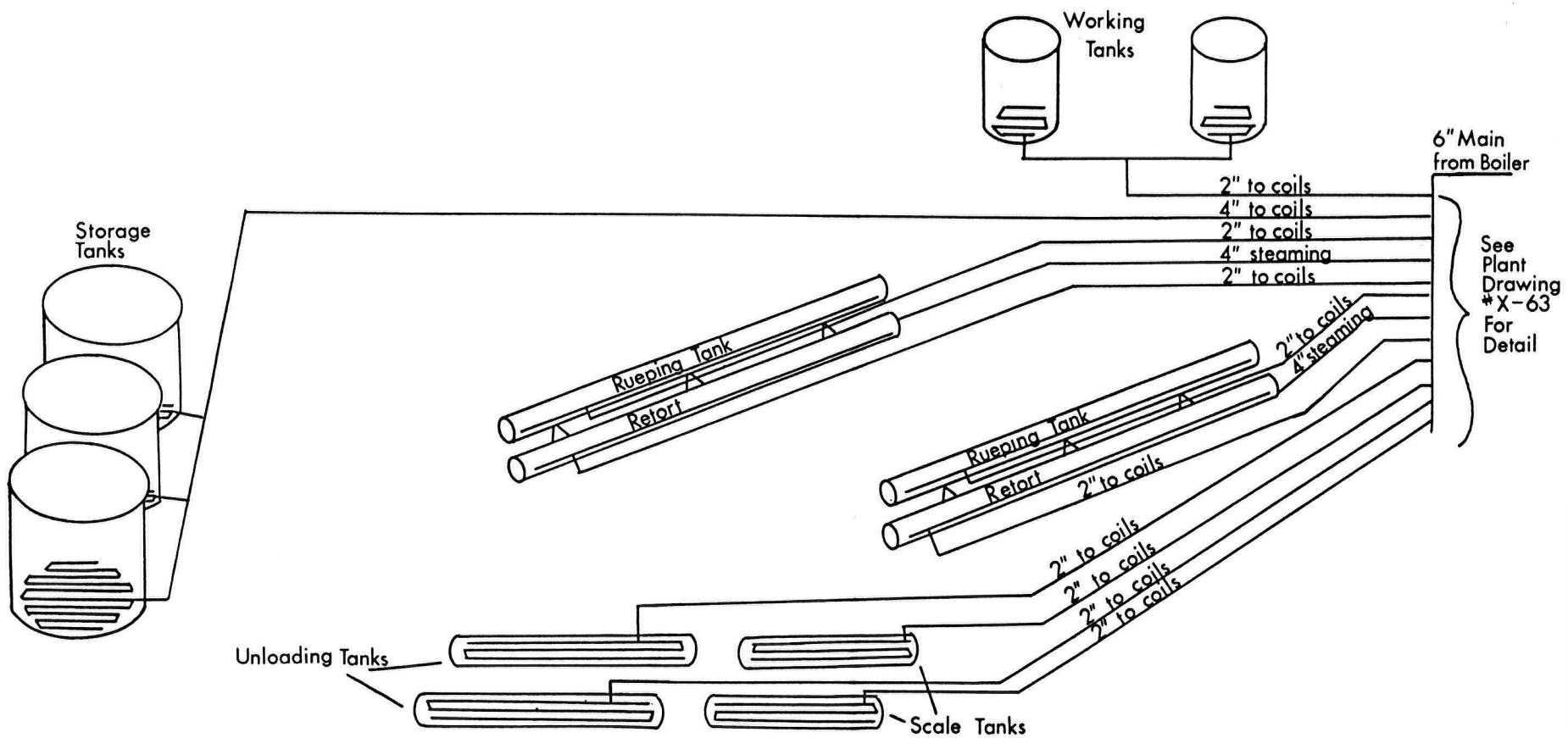
This mill prepared the ties for treatment by incising and boring. Incising was done by moving the tie through rollers with carbide teeth to make incisions in the wood to a depth of about 1/2". This process allowed the tie to absorb creosote more evenly. The same machine also bored holes in the tie to match the pattern of the tie plate for ease of driving spikes and to insure an adequate treatment under the tie plate area. Eight holes were bored in each tie simultaneously with 1/2" bits. As the tie was being bored, hold down devices marked each tie with an identification that told where the tie was manufactured, rail size it was bored for and the size of tie. Once machining was complete the ties were loaded onto trams (carts) and moved by the fireless locomotive to await treatment.

Somers had two treating cylinders about 121 feet long that had doors on one end that opened to allow 14 trams to be shoved inside the cylinder. A cable was attached to the trams so that when they were done treating they could be pulled out. The door was bolted shut and the treating process begun which would last about 8 to 10 hours. When the ties were finished treating they were pulled to the loading area where a log loader would load them into a gondola car for shipment to the track gangs.

Yours truly,

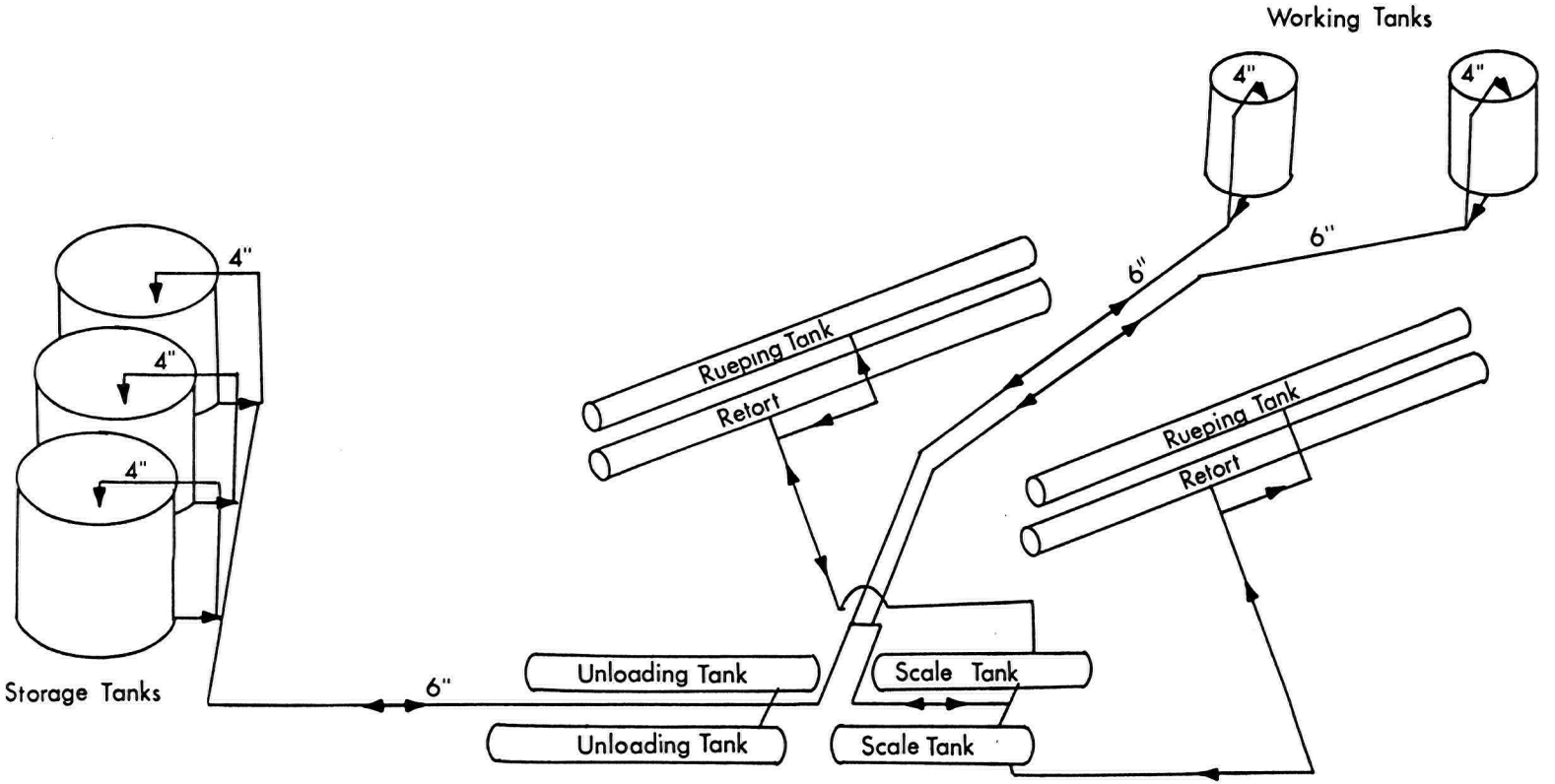
David L. Thomas

David L. Thomas
Manager, Timber Products



PROCESS FLOW DIAGRAM – STEAM SUPPLY LINES
SOMERS TIE PLANT– SOMERS, MT

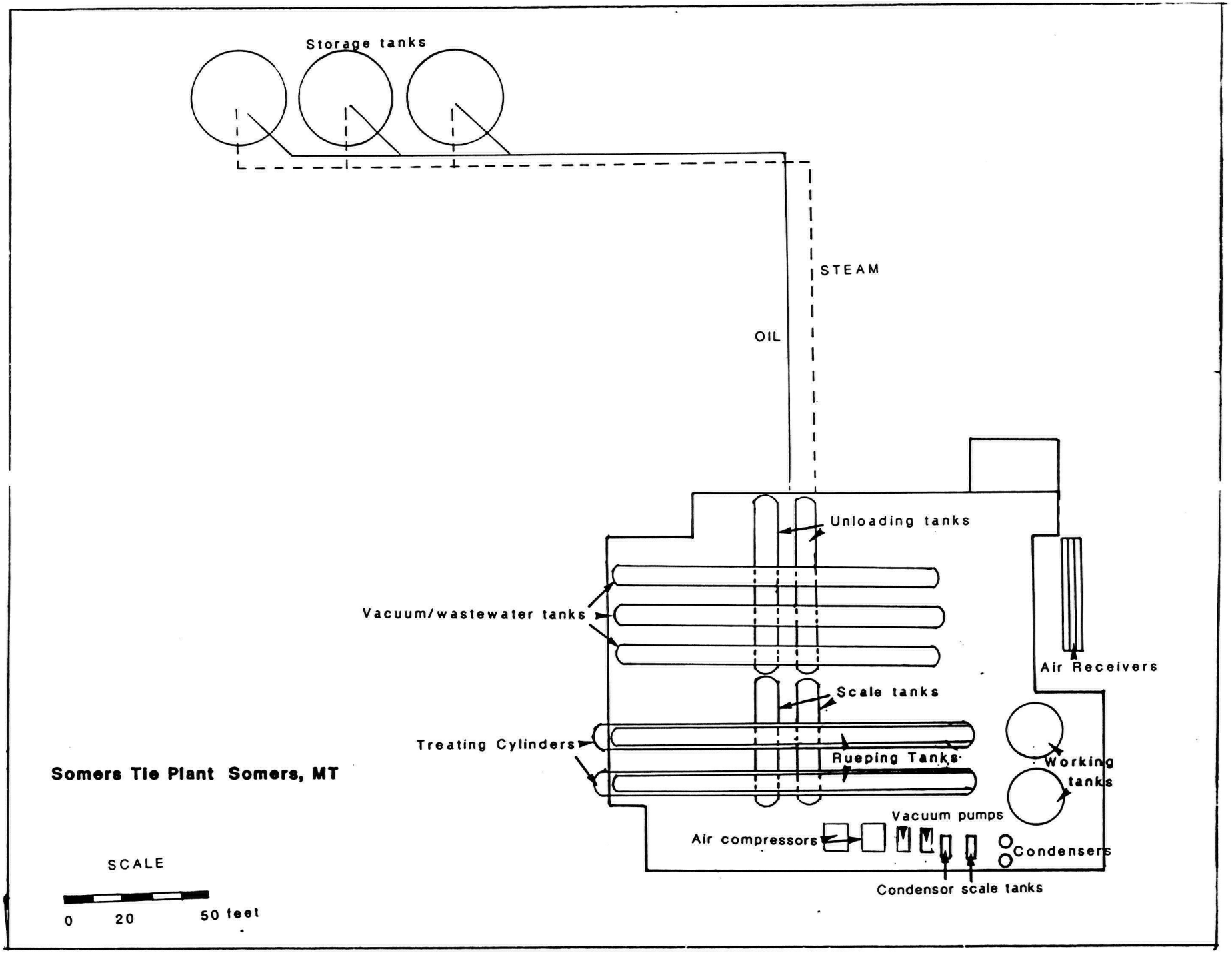
9/90



PROCESS FLOW DIAGRAM – PRESERVATIVES

SOMERS TIE PLANT – SOMERS, MT

9/90


Storage tanks
STEAM
OIL
Unloading tanks
Vacuum/wastewater tanks
Air Receivers
Scale tanks
Treating Cylinders
Rueping Tanks
Working tanks
Vacuum pumps
Air compressors
Condensers
Condensor scale tanks
Somers Tie Plant Somers, MT
SCALE
0 20 50 feet

SUPPLEMENTAL REPORT

TO THE CULTURAL RESOURCE INVENTORY OF THE

RAILROAD TIE PLANT IN SOMERS, MONTANA

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FINAL REPORT

SUPPLEMENTAL REPORT TO THE CULTURAL RESOURCE INVENTORY OF THE RAILROAD TIE PLANT IN SOMERS, MONTANA

Prepared for

Burlington Northern Railroad
Seattle, Washington

by

Janene Caywood, Project Manager
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Historical Research Associates
Missoula, Montana

Prepared for Burlington Northern Railroad
Seattle, Washington

November 7, 1990

INTRODUCTION

The following description of the treating method applied at the Somers tie plant is based on technical reports prepared by Remediation Technologies, Inc. (ReTec) and Historical Research Associates, Inc. in 1986 and 1988.[1] This material is supplemented with information gained from interviews with "tie bucker" and treating engineer Tom Bennett (employed from 1925 until 1959)[2], treating engineer Percy Fine (employed 1949-1972); Adzing and Boring Mill operator Richard Keller (employed 1969-1985); locomotive operators Mike Cash (employed 1963-1979) and Kenneth Daly (employed 1969-1985), and boiler-room maintenance man Norm Lyons (employed 1969-1985).

Ann Hubber conducted the interview with Mr. Lyons in his home in Kalispell, and the interview with Fine, Keller, Cash, and Daly on the grounds of the Somers tie yard. This supplemental report is designed to be used with the collection of historical maps and HAER photographs compiled as part of the Memorandum of Agreement. Further technical information is available in the ReTec (1986) and HRA (1988) reports.

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[1] "Cultural Resource Inventory of the Railroad Tie Plant In Somers, Montana," prepared by Historical Research Associates, Missoula, Montana, October 1988.

"Task Completion Report: Site History of the Somers Tie Plant," prepared by Remediation Technologies, Inc., Kent, Washington, November 1986.

[2] The Bennett interview, conducted by Laurie Mercier on December 3, 1981, is on file at the Montana Historical Society library, Helena, Mt.

1.0 Historical Background Information--Association of the Tie Plant with the Town of Somers.

The town of Somers, located on a low forested ridge on the north shore of Flathead Lake, developed around the 1900-1901 construction of the Great Northern Railway tie plant and the O'Brien sawmill, which provided the tie plant with softwood ties.[3] The Great Northern recruited many of the employees needed for the two inter-connected industrial operations from Norwegian, Italian, and German communities in Minnesota, home state of the Great Northern Railway. The Company provided housing (or leased land upon which to build a house) and later water and electricity, for the 300+ mill workers and the 35-50 tie yard workers. Provisions were available at the Company store--as was credit when the mill or yard were not operating. "They'd pay us 32 cents an hour [circa 1935] and we'd work and save all summer and then they'd take it all to pay our grocery bill in the winter .... And they'd only allow you to buy certain things. Flour, potatoes, eggs. Candy and all that stuff--they didn't have much of that" (Fine 1990). Protection from unspecified outside influences was provided by a 10-foot fence which enclosed the town until the late 1930s. The fence gates were locked between 10 p.m. and 6 a.m.

The Lumber and Sawmill Workers Union (Local 1965)--"we couldn't get on with the railroad union" (Daly 1990)--was introduced in the late 1940s despite the Company fence and the Company's use of "stoodges" (Bennett 1981). Tom Bennett believed that:

> Unions did have power on some working conditions. [They] didn't pressure people to join because everybody wanted to join. Under the old method before we had unions, why an employer could do anything he wanted to. Make any rules he wanted to. After the unions got to operating that more or less done away with that ... Before the unions, [if you got hurt] the Company used the threat of firing (Bennett 1981).

However, Cash, Daly, Fine, Keller, and Lyons perceived the union as generally ineffective. Daly alleged that "We didn't have as much money as the west coast guys did" (Daly 1990) and Lyons argued that "they didn't have too much power. The union was pretty weak" (Lyons 1990).

Despite this perceived lack of an effective bargaining force, a general consensus among those interviewed was that "it was a good job--steady and they paid pretty good"

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[3] Generally, the Great Northern used fir and western pine for straight segments of track, and hardwood, shipped to the plant from Minnesota and points east, for steep grade and corner ties. (Daly 1990).

(Lyons 1990). Bennett recalled that "there was no turn over. People were glad to get a job and stayed for years ... There wasn't anything I disliked about my job. The work was mostly routine and you put in so many hours. There was nothing to be dissatisfied about" (Bennett 1990). This routine and the nature of those hours are described below.

2.0 The Treatment Process

From 1901 until 1927, ties were treated with a zinc chloride treatment. The early Somers tie plant, unmodified between 1901 and 1926, was designed by Chicago civil engineer Samuel M. Rowe. Rowe based his design on the "Zinc Tannin" or "Wellhouse" treating process, adapting it somewhat to accommodate the greater density of western pine and Douglas fir. The completed plant, built to process 4000 ties per day, consisted of two tie storage yards--one for untreated "green" ties, the other for treated "black" ties. These yards were connected to the main treating plant by electrified, narrow gauge trolley lines. The Great Northern railroad spur, which carried ties to and from the treating plant, lay parallel to both the green and black yards.

The zinc-chloride method began by steaming a retort load, which amounted to 500 ties, with approximately 20 pounds per square inch (psi) of pressure. This activated the sap in the wood. After the steam had been discharged, the sap was withdrawn with a vacuum. Treating engineers then injected a zinc chloride solution into the retorts, at a pressure of 100 pounds psi. When the wood had absorbed a sufficient quantity of the solution, the remainder of the chloride was forced back into its receptacle with compressed air. This process was repeated with a glue solution and then a tannic acid solution. The glue and tannin reacted to form a leathery precipitate, which sealed the zinc chloride.

In 1926, the tie plant was modified to accommodate both the zinc chloride and a creosote treatment method. Two new retorts, larger than the originals, and two "rueping" tanks were added. The rueping tanks held the heated preservatives, were of equal length yet smaller diameter to the new retorts, and were placed above them. The volume of preservative in the rueping tanks would fill a loaded retort. At this time, the building was enlarged to hold the new retorts and rueping tanks; the air compressors were relocated to a new machine room built on the east end of the building. In addition, the three storage tanks were moved about 20 meters north of the retort building; and two short, cylindrical scale tanks were installed beneath and perpendicular to the two retorts. The plant resumed production in January 1927, capable of employing either the zinc-chloride treatment process

or a creosote treatment process. Daly (1990) commented that "the guy that designed this place was a genius. Everything is pushed with air pressure or pulled with a vacuum. No pumps are used." The completed facility "contains 500 or more valves and the treating engineer is supposed to know what they do" (Daly 1990). "Supposed to" (Fine 1990).

Furthermore, two steam engines (S-1 and S-2) replaced the electric trolleys that had originally transported ties within the tie plant. The old single gauge tracks were replaced with standard tracks; and an adzing and boring mill ("A & B Mill") was constructed along the railway tracks approximately halfway between the green yard and the treating building. However, with these exceptions, the process of treating ties remained essentially the same from 1901 until the plant closed in 1986. The following description of the treatment process, from green tie to black, details the post-1927 process yet notes when the process differed from that of the pre-1927 period.

Green ties from the O'Brien mill were shipped along the Great Northern track to the "green yard." Here they were unloaded by members of the "green gang"--a crew of 10 to 12 men--and stacked to season for thirty to sixty days. The green gang would also load seasoned ties onto the trams destined for the treating building. Tom Bennett, member of the green gang from 1925 to 1940, recalled that all of the work was piece work. "Tie buckers" would carry ties, often weighing in excess of two hundred pounds, on their shoulders, one at a time. The men were paid 96 cents per hundred ties and could often earn a days wage--approximately $5.00--in six hours (Bennett 1981). Bennett commented that "when we were carrying ties on our shoulder we were doing everything under the worst conditions. We did everything the hard way until they got the Ross lifts [circa 1961]." When asked if men in the green yard would steal the untreated ties, Bennett replied,

> Just stealing in an abstract way: the ones that got to the tram first got to carry ties from the front of the pile and the ones that got there last had to carry ties from the back of the pile. [You] could load the same amount of ties with a huge difference in the output of work (1981).

When the ties had dried sufficiently, the green gang loaded them by hand on to "charges"--a charge consisted of 14 trams, or approximately 800 ties (Daly, Cash 1990). Approximately four charges could be processed per day. Prior to the 1927 modernization of the plant, the charges were conveyed by electrified trolley to the treating plant where they were loaded into the zinc-chloride retorts. Steam engines running on standard gauge tracks were introduced in 1927. These engines had no firebox and did not produce their own steam; steam was periodically pumped on board from a stationary boiler. There were

two engine shifts, one operating from 2:30 a.m. until 10:30 a.m. and the other from 10:30 a.m. until 6:30 p.m.

In the later years of operation, replacement parts for the antiquated engines were made in the machine shop connected to the main boiler room (Lyons 1990). The engines were maintained in the north end of the treating building, next to the original retorts. Once a year, during the thirty days when the plant was closed for boiler maintenance, the engine valves would be changed, and seats and brakes checked (Daly, Keller 1990).

After 1927, the loaded trams were hauled to the A & B Mill for processing. In the early years the ties were hand loaded into the mill. After the introduction of hydraulic lifts in the early 1960s, the lift trucks would take the seasoned ties directly from the green yard to the A & B Mill's conveyor belt. The large concrete slab located next to the site of the A & B Mill provided a platform for the lift trucks (Keller 1990). The A & B Mill adzed a flat side on each tie where the rail would sit, then bored holes in the tie in a selected bore size according to the diameter of the pound rail that would be spiked to it. "There were 16 sizes of boring plates" (Keller 1990). Finally, an "incisor machine" made numerous, small incisions on the surface of the ties in order to facilitate infiltration of the preservative. The conveyor belt would then deposit the ties directly onto the waiting trams; two men, one on each side of the trams, would position them with a "pickeroon." The steam engines then pushed the loaded trams from the A & B mill to the massive doors of the retorts.

Richard Keller, who worked in the A & B Mill from 1969 until the early 1980s, recalled that the most memorable "working condition" was the grease, "you were so coated with grease and oil when you were working on the machinery. It was constant. Your coveralls at the end of the week ... they'd almost stand up by themselves" (Keller 1990).

The mechanized wench used to lift the rails from the track into the retorts was not installed until the early 1980s. "Many, many years we would stand here, one man per rail, and pack 'em and slide 'em into the retorts. We never had the electric wench in until the last four years" (Cash, Daly 1990). The heavy, round doors were then sealed by 42 3 1/2 inch bolts which were tightened with a 7-foot long rachet. Mr. Daly said (1990), "I weigh 170 pounds and I could almost swing on the thing." The locomotive drivers and those opening the retorts were both subjected to the heat, smoke, and smell of the newly-treated

ties. "If you had the afternoon shift and were pulling retorts and it was 70 degrees outside and the retorts were 190 degrees ... There was a lot of smoke and fumes" (Daly 1990).[4]

The creosote method adopted at the Somers tie plant utilized a mixture of creosote and fuel oil. The percentage of creosote to fuel oil varied with the type of wood being treated and the purpose of use. The compounds were stored separately in large tanks north of the treating plant. Fine remembered (1990) that "we mixed it in the big tank in the back of the [treating building]. They mixed it by weight, by a certain temperature, and a certain gravity. The oil was a little lighter than water but the coal tar that they used was 10 1/2 pounds to the gallon and it had to be mixed equal by volume" (Fine 1990). The precipitate was transported from the holding tanks to the mixing tank to the rueping tanks via underground pipes by either air pressure or vacuum.

Creosote was most often applied using the Lowry method. After the retort had been loaded with ties, it was filled with a heated creosote/fuel oil mixture (approximate temperature was between 180 to 210 degrees fahrenheit) from the rueping tanks mounted directly above the retorts. As the creosote was absorbed into the ties it was replaced with creosote from the scale tank. Air compressors then blew the remaining creosote in the scale tank and the retort tank up to the rueping tank, with about 140 pounds pressure. A vacuum was then applied to the ties in the retort, and the resulting precipitate was drained back into the scale tank (ReTec 1986). What spilled out of the retorts during the normal course of operations was channelled into the basement and vacuumed into the old retorts, where the water was boiled out. The preservative was then returned to the storage tanks (Historical Research Associates 1988). When the retorts were cleaned once a year "[we'd] shovel [the residue] into this [small tram] and take it out and dump it in the yard" (Daly, Cash 1990).

Retired treating engineer Percy Fine recalled that the heat and the smell of creosote and fuel oil dominated the work place (Fine 1990). Daly indicated (1990) that the temperature in the area surrounding the retorts was generally 100 degrees; temperatures up in the catwalks adjacent to the rueping tanks were "probably in excess of 150 degrees. No one ever knew for sure" (Daly, 1990).[5] The treating plant operated 24 hours a day, with

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[4] These working conditions, however, met the Occupational Safety and Health Administration (OSHA) standards. See "Remedial investigation and Feasibility Study for the Somers Tie Plant" (Prepared by Remedial Technologies (ReTec) for Burlington Northern Railroad), April 1989.

[5] ReTec officials indicated that temperatures along the catwalk probably averaged between 100 and 115 degrees (Personal correspondence, Lena Blais to Janene Caywood, October 1990).

a single treating engineer, and two men assigned to opening and closing the retorts and loading the ties, working each eight hour shift.

Industrial spills associated with the treating process were not unknown. Bennett, treating engineer from 1940 to 1959, recalled that "once or twice in the tie treatment plant we had an accident where we opened up the wrong valve and let the solution go all over the floor and had to clean it up again. But I don't remember any accidents where people got hurt." Fine recounted the time that two employees "got in a hurry to open the retorts and the oil wasn't all out of it yet. So they just stood there and watched it run out the front door" into the yard and the treatment building. "It's just lucky I remembered to turn off the sewer valve ... or we would have had 5000 gallons [of creosote] in the lake" (Fine 1990). "Everybody got to clean the building" (Daly 1990).

Occasionally, the cable or chain securing the ties to the retort tram would break during the treating process. It was then necessary, after allowing the retort to cool for at least 24 hours, to send men into the retorts to retrieve those ties which had fallen between the tram and the retort walls. Even with the cool-down, the interior of the retort would be exceedingly hot. When asked how often the cables would break, Daly replied "Oh, it went in cycles, sometimes it happened a lot. Too often" (Daly 1990).

Mr. Cash recounted (1990) that following the treating process, "they'd pull the charges out and spot them out there on the platform. Then these buckers would come to work about 2:30 in the morning and they'd start packing 'em off of the trams into the cars and they'd probably take off about three charges [in eight hours]" (Cash 1990). The black ties would then be stacked in the black yard according to size and species and later loaded into Great Northern flat cars for transport. The piece-work wage was slightly higher than that in the green yard--$1.00 per hundred in the 1930s (Bennett 1981). Cash stated that

> when they [workers in the black yard] got through they'd go over here to the bathhouse and they had a big tub full of coal oil and they'd wash that creosote off with coal oil and then they'd jump in the shower ... A lot of the guys couldn't stand this creosote because it would burn them. If you were tow headed or a blond you could not work around the hot creosote. You'd blister (Cash 1990).

This bathing process continued until the early 1960s when the hydraulic lifts were introduced and the treated ties were no longer handled directly (telephone interview with Kenneth Daly, Nov. 6, 1990).

The physical problems associated with work in the black yard--and the green yard--were also considerable. After years of bucking ties, "about all of them guys, before they passed away, were all humped over ... Everyone that I knew, their hips were all out ... their backs were all gone--crushed vertebrae--... [and their] arches would break" (Cash, Daly 1990).

Steam pressure used to heat the preservative mixtures and run the steam engines was provided by a large boiler located south of the treating building. Maintenance of this system was a 24 hour, year-round responsibility. Prior to installation of the on-site boiler plant (circa 1948),

> it took approximately five different steam-boiler plants to run all the operations in Somers. The big one down by the lake--there were seven boilers down there ... Meno dropped a 48" pipe wrench down the tubes, and it went through to the mud drums. That's how big the tubes were on them big boilers (Cash 1990).

Steam generated at these boilers--using hog shavings from the lumber yard as fuel (telephone interview with Percy Fine, Nov.7, 1990)--was transported from the lake to the tie plant (and from within the tie plant to the various facilities) by large, overhead conduits. Following the 1948 closure of the lumber yard, the current boiler facility, run on fuel oil, was constructed (Fine Nov.7,1990).

Although boiler room work was considered the most dependable--and thus the most desirable--the noise level was "pretty steady" (Lyons 1990). "In the treating plant they had the heat, but in the boiler room they had the noise" (Daly 1990). When not working on the boilers themselves, the mechanics fashioned replacement parts for the steam engines (Lyons 1990).

The Somers tie plant was closed in July of 1986. Employees were told that a computer had indicated that hardwood ties, more efficiently processed in the East, closer to the timber source, were more effective (Cash et al, Lyons 1990). Most of the thirty-plus employees of the tie plant moved out of area following the closure of the Somers tie plant (Daly, Keller 1990).